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The Tao of Coopetition in Organizations:
Culture and Categorization of Competitive Behaviors in Teams and Working Relationships

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The Tao of Coopetition in Organizations: Culture and Categorization of Competitive Behaviors in Teams and Working Relationships

by

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Dedication

To my wife, lover and lifelong collaborator, Zhaoli (Joy)

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The Tao of Coopetition in Organizations: Culture and Categorization of Competitive Behaviors in Teams and Working Relationships

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This dissertation provides a cultural-cognitive perspective on the relationship between cooperation and competition within organizations. Instead of explicitly defining the relationship between cooperation and competition, I examine lay beliefs about the relationship and the impact of these beliefs on perceptions and behavior.

This dissertation consists of two studies. In the first study, I examine the role of peoples' categorization of competitive behaviors as cooperative or non-cooperative in teams. I assess the influence of dialectical reasoning, a culturally-shaped reasoning style, on the categorization of competitive behaviors and the reaction to competitive behaviors within teams. I test my predictions with a laboratory experiment with participants in the US and China. The analyses from this study reveal cultural differences in perceptual and behavioral reactions to competitive behaviors, with differences partially attributed to reasoning style and categorization.

In the second study, I examine the role of people's categorization of competitive behaviors as cooperative or non-cooperative in working relationships. I assess the influence of culture and categorization on people's ego-centric network of working relationships. I test my predictions with a survey of working professionals in the US and China. The analyses from this study demonstrate that people who categorize certain competitive behaviors as cooperative are more likely to be more cooperative with people they are more competitive with instead of having exclusively cooperative or competitive relationships. The analyses also reveal national cultural differences in people's networks of working relationships that are partially attributable to categorization of competitive behaviors.

By empirically connecting culture and reasoning style to cooperative and competitive behavior in teams and working relationships, this research enhances our understanding of fundamental aspects of organizations, suggesting a new approach to examining the influence of societal factors in behavior within organizations.

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PROLOGUE

The initial motivation for this dissertation comes from a reflection of my observations as a manager at an Internet company from 2000-2001. The company was engaged in a software development project staffed by a team of American and Indian programmers based in Dallas and a team of Chinese programmers based in Shanghai.

One day, an American programmer, John, complained to me that a Chinese programmer, Lewin, was not cooperating[1]. I was surprised to hear an American comment about a lack of cooperation by someone in China, as I had always believed that Chinese employees were generally cooperative. Nevertheless, I tried to subtly suggest to Lewin that John believed he wasn't cooperating sufficiently. Lewin responded kindly and said that he will do his best to work as hard on the project as possible.

Weeks later, John approached me again. He threatened to leave the project if Lewin wouldn't cooperate more. He said:

"Lewin is still not cooperating. He wanted to beat me at everything—more code, newer code, fewer bugs. I can only cooperate for so long when he's acting so competitively."

I then went to Lewin again and asked him bluntly why is he is not cooperating with John. Lewin looked confused and responded by saying:

"I am cooperating. I am working as hard as I can on this project."

[1] The names used have been fictionalized.

"Are you trying to compete with John?"

"Yes, I am."

"So you're not really trying to cooperate, are you?"

"Yes, I am. That's why I'm competing."

I was perplexed. Lewin did not change his behavior and John followed up on his threat and left the team. The project fell apart.

INTRODUCING A LAY PERSPECTIVE OF COOPERATION AND COMPETITION

Theories about lay beliefs (Dweck, Chiu, & Hong, 1995; Hong, Levy, & Chiu, 2001) and dialectical reasoning (Peng & Nisbett, 1999) are useful for analyzing this event. It is possible that John and I believed that Lewin's action was competitive and non-cooperative, whereas Lewin believed that his action was both competitive *and cooperative.* John and I probably believed that any instance of competition must be non-cooperative, whereas Lewin probably believed that some instances of competition can also be cooperative. We differed in our beliefs, leading to misunderstanding and failure.

An examination of peoples' lay beliefs is not new to research in organizations. Previous literature has discussed lay beliefs about the self (Chiu, Dweck, Tong, & Fu, 1997; Dweck et al., 1995), peoples' abilities (Sue-Chan & Wood, 2009), negotiations processes (Kray & Haselhuhn, 2007), and creativity (Runco & Bahleda, 1987). Other literature has looked specifically at lay beliefs about the relationship between two

categories, including the categories of "threats" and "opportunities" (Dutton & Jackson, 1987; Jackson & Dutton, 1988) and "work" and "play" (Glynn, 1994). But despite a plethora of research on the relationship between cooperation and competition in organizations (e.g. Johnson & Johnson, 1989), our knowledge of people's lay beliefs about the relationship between cooperation and competition is limited.

A more comprehensive examination of lay beliefs on the relationship between cooperation and competition is important for several reasons. First, a discussion of cooperation and competition is not limited to scholars. "Cooperation" and "competition" are popular *cultural categories* (Atran, Medin, & Ross, 2005; D'Andrade, 1995; Romney & Moore, 1998; Sperber & Hirschfeld, 2004) that people use to make sense of their everyday experience. For example, in the United States, there are currently over 300,000 books referencing "cooperation", over 400,000 books referencing "competition", and over 15,000 books referencing both "cooperation" and "competition" sold on Amazon.com. There are also over 2,000 articles referencing "cooperation", over 5,000 articles referencing "competition" and over 200 articles referencing both "cooperation" and "competition" on Factiva on a given day. The ubiquity of their presence in everyday life is likely to transfer to people's organizational experience. Second, organizations are interpretive systems (Daft & Weick, 1984). A complete understanding of how organizational members make sense of their organizational experience should include an understanding of how people interpret fundamental organizational categories such as cooperation and competition. Finally, cooperation and competition are conventionally

treated as opposites (e.g., Beersma et al., 2003). An understanding of how organizational members think about the relationship between cooperation and competition may provide insight into how organizational members think generally about opposites.

This dissertation examines lay beliefs about the relationship between cooperation and competition. I also examine the effects of these beliefs on both immediate outcomes within a team context and long-term outcomes in working relationships within an organization. I examine peoples' categories of cooperation and competition, and their *dialectical reasoning*, a culturally-influenced reasoning style about opposites (Norenzayan, Smith, Kim, & Nisbett, 2002; Peng & Nisbett, 1999). This provides an understanding of people's specific beliefs about the relationship between cooperation and cognition and their general beliefs about opposites. I examine cross-national comparisons in beliefs between the US and China, and examine the underlying mechanisms that mediate cross-national differences. As a result, this dissertation does not only aim to provide a better understanding of the relationship between cooperation and competition, but to provide a broader understanding of the connection between culture, reasoning, knowledge, and behavior in multiple organizational contexts.

STRUCTURE OF DISSERTATION

This is a two study dissertation. In the first study, I examine people's thoughts about cooperation and competition within the team context. I assess the influence of dialecticism on people's categorization of competitive behaviors and people's reaction to

competitive behaviors within a team. This study connects culture to cognition to immediate behavioral outcomes. In the second study, I examine the influence of people's thoughts about cooperation and competition within the larger organizational context. I assess the influence of people's categorization of competitive behaviors on the cooperativeness of people's working relationships and networks of working relationships within the organization. To maintain the relative independence of the two studies, a few limited passages in each study has similar content. I conclude with a brief conclusion that connects both studies.

STUDY 1: DIALECTICAL REASONING & COOPETITION IN TEAMS

Introduction

Cognition has long been considered an important aspect of team functioning (see Salas & Fiore, 2004 for a review). Most literature on cognition within teams relates to knowledge about the current task or team members (e.g., Mathieu, Goodwin, Heffner, Salas, & Cannon-Bowers, 2000). But other forms of cognition within teams are shaped by factors that reside outside of the current team, including national culture (Jelinek & Wilson, 1995; Zellmer-Bruhn & Gibson, 2006). Previous literature has identified several national cultural influences on team members' knowledge content, including team member beliefs about the amount of agency of individuals within the team (Kashima et al., 2005; Morris, Menon, & Ames, 2001), the metaphors that team members use to conceptualize teamwork (Gibson & Zellmer-Bruhn, 2001), the social categories that team members use to make inferences about other members (Chatman & Flynn, 2001; Stroessner, 1996), and the categories that team members use to interpret other team members' behavior (Keller & Loewenstein, Working Paper). But culture shapes not only knowledge *content*, which pertains to what people know (Burger & Luckman, 1967; Douglas, 1986), but also reasoning, which pertains to how people use and think about what they know (Medin, Ross, Atran, Burnett, & Blok, 2002; Nisbett, Peng, Choi, & Norenzayan, 2001).

In this study, I focus on culture's influence on reasoning and the implications for behavior in teams. First, I examine dialectical reasoning, which is a culturally-influenced reasoning style about opposites. Second, I assess how dialectical reasoning influences people's use of the categories of cooperation and competition. Third, I assess how that use of cooperation and competition affects reciprocity in teams—specifically, how team

members react to other team members' competitive behaviors. My study therefore aims to contribute to literature on teams by introducing a role for culturally-shaped reasoning and connecting this reasoning to two fundamental kinds of team behavior; cooperation and competition.

DIALECTICAL REASONING

A complete account of cognition in teams, like any complete account of cognition, has to examine both content (i.e., knowledge) and processes (including reasoning) that act on that content (Anderson, 1983; Palmer, 1978). For example, a team's ability to develop a transactive memory system depends on each team member having both *knowledge* about other members' expertise and *processes* for encoding, storing and retrieving the other members' knowledge (Hollingshead, 1998; Lewis, 2003; Wegner, 1986). As a second example, a team's ability to make accurate group decisions can depend on both knowledge from other team members and whether team members use counterfactual reasoning to process that knowledge (Galinsky & Kray, 2004). What I will examine is one fundamental kind of knowledge content, opposites (Fiol, 2002; Weber, Heinze, & DeSoucey, 2008) and a knowledge process, reasoning about opposites.

Organizations and teams constantly face seemingly paradoxical or contradictory situations involving the joint occurrence of opposite phenomena, making the reasoning of opposites particularly important for organizations (Poole & Ven, 1989; Quinn & Cameron, 1988) and teams (Miron-Spektor & Argote, 2008; Smith & Tushman, 2005). For example, teams may be confronting simultaneous demands for both autonomy and democracy (Quinn & Cameron, 1988). When approaching potentially contradictory situations, people can vary in their reasoning of the opposites by either integrating both opposites or differentiating between the two opposites (Smith & Tushman, 2005). For

example, if someone sees a normally helpful person stealing from their team members, a person may integrate helping and stealing by thinking about how the stealing may reinforce helping (perhaps it was being done to teach an important lesson). Alternatively, a person may differentiate by either changing opinions of the colleague or seeking reasons why the instance of stealing was an exception.

The reasoning of opposites is shaped by culture, as people acquire lay ontological theories about knowledge through cultural artifacts and social interactions within each cultural group (Hong et al., 2001). A key culturally-influenced reasoning style about opposites is *dialectical reasoning* (Norenzayan et al., 2002; Peng & Nisbett, 1999; Spencer-Rodgers, Peng, Wang, & Hou, 2004). Dialectical reasoning involves a general propensity to integrate and not differentiate when faced with a contradiction. Dialectical reasoning stems from two lay ontological theories. A lay *theory of contradiction* holds that two ostensibly contradictory concepts can both be true (Spencer-Rodgers, Boucher, Mori, Wang, & Peng, 2009). An associated lay *theory of change* asserts that the universe is unpredictable and dynamic, therefore what may be the same at one point of time may be different at another point of time (and vice-versa) (Spencer-Rodgers et al., 2009).

People acquire dialectical reasoning from external cultural artifacts such as stories and proverbs (Peng & Nisbett, 1999). They typically acquire it during adolescence or young adulthood, because it is a relatively complex form of reasoning (Basseches, 1984). Dialectical reasoning is instantiated in cultural artifacts in a wide variety of cultures. It is relatively rare in Western culture, although it does appear in some modern Western philosophy (Walton, 1990). It is addressed by Hegel (Gadamer & Smith, 1982), Marx (Marx, Fowkes, Mandel, & Fernbach, 1976) and Habermas (Ingram, 1989). But it has not had a major impact on general lay beliefs in Western culture (Samson, 2004). In contrast, cultural artifacts that emphasize dialectical reasoning are prevalent in Chinese, Japanese

and Korean cultures (Peng, Spencer-Rodgers, & Zhong, 2006). Its meaning is exemplified in the 阴阳(*Yin-Yang)* symbol found in the classic text 易经(*Yi Jing*, *Book of Changes*; Willhelm & Baynes, 1961), demonstrating that black and white are part of one whole. The integration of opposites is a prominent feature in Laozi's 道德经(*Dao De Jing*; Lao, 1982), and is associated with wisdom. The virtue of finding a "middle way" between two extremes is also found in Confucius' 中庸(*Zhong Yong, Doctrine of the Mean; Confucius, 2004*). In China, Japan, Korea and Vietnam, these texts have long been canonized (Schwartz, 1985), and dialectical reasoning has long permeated stories, proverbs and other commonplace cultural artifacts within East Asian societies (Peng et al., 1999).

Because greater access to cultural artifacts makes knowledge associated with those artifacts more culturally accessible (Hong, Morris, Chiu, & Benet-Martinez, 2000), people in East Asia, relative to those in Western nations, are more familiar with dialectical reasoning (Spencer-Rodgers et al., 2009; Spencer-Rodgers et al., 2004). As a result, East Asians, such as people in China, are more likely to have a general disposition towards dialectical reasoning, and hence more likely use dialectical reasoning in multiple contexts (Spencer-Rodgers et al., 2009; Spencer-Rodgers et al., 2004). Therefore, in confirmation of previous findings and completeness in the current logic:

H1: People in China have a higher propensity for dialectical reasoning than people in the US.

One major influence of dialectical reasoning is as a guide to reasoning about *cultural categories* (Atran et al., 2005; D'Andrade, 1995; Romney et al., 1998). Cultural categories are social conventions (Millikan, 2005) generated by cultural groups for

labeling sets of objects, material practices, social actors and other socially experienced examples (Douglas, 1986; Hannan, Pólos, & Carroll, 2007). People use categories that they believe are opposites (e.g., "bad" and "good", "hot" and "cold", "black" and "white") to classify phenomena and to make inferences based on whether a phenomenon is classified in one category or in an opposing category (Goldstone, Lippa, & Shiffrin, 2001; Yamauchi & Markman, 2000). But the inferences that people make based on seemingly opposite categories can be influenced by dialectical reasoning, and thus differ by national culture (Choi, Nisbett, & Smith, 1997). Because dialectical reasoning includes a higher tolerance of contradictory propositions, people with more dialectical reasoning are more likely to believe that something and its opposite can both be true. Consequently, when something is a member of one category, people a higher propensity for dialectical reasoning should be more likely to believe that it can *also* be a member of the opposite category. For example, Choi and Nisbett (2000) found that Koreans, who as members of a society that has more cultural artifacts that emphasize dialectical reasoning, have, on average, a higher propensity for dialectical reasoning, were less surprised than Americans when they discovered that an honest person conducted a dishonest act or when an unhelpful person conducted a helpful act.

COOPETIVE CATEGORIZATION

There are many seemingly opposite categories that are applicable to the team context. For example, people respond to task cues differently depending on whether the cues are categorized as "work" or categorized as "play" (Glynn, 1994). Because team members are in relationships that are both professional and interpersonal (Dirks, 1999), the way people categorize tasks may influence how they perceive their relationship with others. If team members believe that they must choose between tasks that involve "work"

or “play” as a signal for their relationship, they may believe they have to choose which tasks to engage in. Consequently, they may believe they must make a choice between productivity (for work) and cohesion (for play), even though the two team processes need not be mutually exclusive (Gammage, Carron, & Estabrooks, 2001). I suggest that whether someone believes they need to choose one or the other is a function of a person’s habitual use of dialectical reasoning. A person who habitually engages in dialectical reasoning should believe that team relationships can involve both work and play and therefore should not believe it is necessary to choose between either productivity or cohesion. Another example is the categorization of team roles of “leader” and “member” as hierarchical roles within the team (Dienesh, 1986; Gerstner & Day, 1997). How someone behaves may depend on whether they choose to fit a role that indicates “leader” or a role that indicates “member”. However, using dialectical reasoning may allow members to believe they can be both leaders and members and so behave according to both roles.

In this study, I focus on two categories that are conventionally treated as opposites and are central to team member relationships: “cooperation” and “competition”. Most research on the relationship between cooperation and competition explicitly defines cooperation and competition as opposites (e.g., Bettenhausen & Murnighan, 1991; Johnson et al., 1989). According to these views, team members are either in a competitive situation or in a cooperative situation (Deutsch, 1949), wanting to compete or wanting to cooperate (McClintock & Allison, 1989), acting competitively or acting cooperatively (Komorita & Parks, 1996). Conceptually and operationally, according to this view, the absence of cooperation indicates the presence of competition (and vice-versa). Consequently, most research on the relationship between cooperation and competition explores whether cooperation is more beneficial to teams (e.g., Qin, Johnson, & Johnson,

1995), competition is more beneficial to teams (e.g., Munkes & Diehl, 2003) or the moderators that influence whether cooperation or competition is more beneficial to teams (e.g., Beersma et al., 2003). Research has tended to treat cooperation and competition as opposites that are mutually exclusive.

Recently, a set of related, alternative theoretical perspectives about the relationship between cooperation and competition has emerged. Typically referred to as "coopetition", these perspectives conceptualize cooperation and competition not as opposites, but as two distinct, potentially orthogonal dimensions (Brandenburger & Nalebuff, 1996; Luo, 2005; Tsai, 2002). Conceptually and operationally, cooperation and competition can be both present. **Figure 1** illustrates this distinction from other theories.

Coopetition has been conceptualized in different ways. According to one view, coopetition occurs when value creation (cooperation) and value claiming (competition) take place within the same relationship (Brandenburger et al., 1996). Value creation involves parties taking advantage of complementarities, such as through combining knowledge. Value claiming involves each party appropriating gains and trying to get the largest possible share of whatever value was created. For example, team members might simultaneously cooperate and compete by working together on a task (cooperation) and trying to earn relatively more credit for accomplishing the task (competition). According to a second view of coopetition, coopetition involves the combination of two distinct, orthogonal types of personalities; a cooperative personality and a competitive personality (Xie, Chen, Yu, & Chang, 2006). For example, a team member might have a general disposition towards wanting to help other members of the team (a cooperative personality). At the same time, the team member might also like being the most highly rewarded member of the team (a competitive personality).

I offer a third view of coopetition. I conceptualize coopetition as a form of categorization. Instead of generating a fixed definition for "cooperation" and "competition", in this view "cooperation" and "competition" are treated as two distinct and potentially orthogonal cultural categories (i.e., categories generated by cultural groups, not researchers). Each cultural group decides whether a particular behavior can be a member of both, one or neither categories, as illustrated by Figure 2. This view is related to Jackson and Dutton's (1988) study of the relationship between *threats* and *opportunities*. They found that managers have the potential to categorize environmental issues as both threats and opportunities, exclusively as threats, exclusively as opportunities, or neither as threats nor as opportunities. Similarly, if team members have two distinct, orthogonal categories of "cooperation" and "competition", even if they view cooperation and competition as a whole as opposites, they could categorize specific behaviors as cooperative and competitive (i.e., coopetive). I define a team member's propensity to categorize others' behaviors as both cooperative and competitive as tendency for *coopetive categorization*. Team members who categorize many other team member behaviors as both cooperative and competitive have a high tendency for *coopetive categorization,* whereas team members who categorize most if not all competitive behaviors as non-cooperative (and vice-versa) have a low tendency for coopetive categorization.

The potential for coopetive categorization does not guarantee that a team member would categorize a behavior as both cooperative and competitive. Coopetive categorization requires that a team member believes that a particular behavior is both cooperative and competitive. A major factor in whether a behavior is a member of a particular category is whether its features are similar to features of representative members of the category (Rosch, 1978; Smith & Medin, 1981). As a result, coopetive

categorization is likely to hinge on whether a behavior can have central features of both cooperation and competition. According to Tyler and Blader (2000), the key feature of a cooperative behavior is that it benefits or limits harm to the group. According to Johnson and Johnson (1989), the key feature of competitive behavior is an attempt to attain a relatively higher position, so as to secure material or social gains. Therefore, if these research-defined features of cooperation and competition are also true of the cultural categories of cooperation and competition, then a behavior that is both beneficial to the group and also involves an attempt to attain a relatively higher position could be categorized as an instance of both cooperation and competition.

Using the core features of cooperation and competition just discussed, I propose two kinds of competition, *attempts to outperform* and *attempts to undermine*, that are intended to differ in how readily they could be categorized as cooperation and as competition. I define attempts to outperform as behaviors that are intended to promote a team member's status through increasing his or her own performance relative to other members. For example, a team member may try to finish a project faster than others to stake a claim that the team member is the hardest worker in the team. I suggest this is a type of competitive behavior because it has as a core feature a concern for relative standing. I also suggest this type of behavior could be perceived as cooperative because such actions indicate effort on group work. Task-related effort (as opposed to "free-riding") is a common feature of cooperation (Jones, 1984), and a behavior that benefits the group. The increased effort, if observed by other team members, could also lead those others to increase their effort, as team members reciprocate team-related effort (Price, 2006). Consequently, there is the potential for an attempt to outperform—a kind of competitive behavior—to be beneficial to the group overall and therefore be perceived as cooperation.

In contrast, I define attempts to undermine as behaviors taken to increase some members' relative standing by materially harming other team members. This is not constructive criticism, but sabotage. For example, team members might attempt to undermine others by providing them with false information that if used would lead them to take poor actions. This behavior seems likely to lower the team's overall performance, especially given that the other team members are likely to respond to the attempt to undermine by engaging in additional harmful acts, creating a tit-for-tat downward spiral (Andersson & Pearson, 1999; Glomb & Liao, 2003). Therefore, attempts to undermine are likely to be perceived as competitive, and because they should also be harmful to the team as whole, they should not be perceived as cooperative.

The distinction between attempts to outperform and attempts to undermine is related to a prior distinction in the social interdependence literature that also distinguishes between more and less harmful forms of competition (Stanne, Johnson, & Johnson, 1999). That distinction is between zero-sum and appropriate competition. Zero-sum competition is defined as situations in which one team member wins and all others lose. Appropriate competition is defined as competition subject to the following stringent limitations: winning is relatively unimportant, all members have an equal chance to win, there are clear rules, and members can monitor each others' performance (see also Tjosvold, Johnson, Johnson, & Sun, 2003). The distinction I draw between attempts to outperform and attempts to undermine places many fewer restrictions on relevant situations, and so are relevant to a greater array of situations. Attempts to undermine are somewhat like zero-sum competition, except that it is possible for attempts to undermine to lead to lose-lose outcomes, not just win-lose outcomes. Attempts to outperform are somewhat like appropriate competition in emphasizing the possibility for group gains, but it only requires the monitoring assumption. Thus I rely on attempts to outperform and

attempts to undermine as types of competition because they apply more broadly than zero-sum and appropriate competition, and because they better fit a cultural category-based approach.

The earlier discussion of attempts to outperform and attempts to undermine implies a difference with respect to their category memberships. If team members' lay beliefs about cooperation and competition follow the logic described, then attempts to outperform should be able to be categorized as both an instance of competition and an instance of cooperation. Attempts to undermine, in contrast, should be able to be categorized as an instance of competition but *not* as an instance of cooperation. Therefore, to capture the key distinction:

H2: People will categorize team members' attempts to outperform as more cooperative than team members' attempts to undermine.

DIALECTICAL REASONING AND COOPETIVE CATEGORIZATION

I have just argued that there is a type of team member behavior, attempts to outperform, that has the potential to be categorized as both cooperative and competitive. Now I turn to the question of why people would or would not categorize attempts to outperform as both cooperative and competitive (i.e., engage in coopetive categorization). I suggest people's tendency to do so should be influenced by dialectical reasoning.

Even though research on coopetition suggests that cooperation and competition can co-occur, as discussed earlier, cooperation and competition are typically viewed as opposites in research on teams (e.g., Deutsch, 1949), and this is echoed in research on inter-firm relations (e.g., Lado, Boyd, & Hanlon, 1997), and research on international

affairs (e.g., Esty, 1998). Cooperation and competition are also widely discussed as opposites in the popular press (e.g., Kohn, 1993). The words "cooperation" and "competition" are also listed as antonyms in both English (Merriam-Webster, 2006) and Chinese (BWXY, 1978) thesauruses. Therefore, there are grounds for claiming that cooperation and competition are, by social convention, deemed to be opposites in both the United States and China. Consequently, people may be relatively unlikely to categorize competitive behaviors as also cooperative.

Because cooperation and competition are commonly treated as opposites, whether people categorize a competitive behavior as also cooperative should be impacted by dialectical reasoning. As mentioned earlier, dialectical reasoning involves a tolerance for contradiction and a belief about change. Therefore, if a team member has a high propensity towards dialectical reasoning, the team member is more likely to tolerate the contradictory idea that a behavior can be both cooperative and competitive, even if the idea is counter-intuitive to the premise that cooperation and competition are opposites. The team member is also more likely to think about the relationship between cooperation and competition based on the current situation and not based on a universally applicable, standard rule. Consequently, the team member is more likely to discover a behavior that is both cooperative and competitive. Earlier I claimed that attempts to outperform could potentially be categorized as both cooperative and competitive, because the behavior exhibits features that represent both cooperation and competition. As a result, a higher propensity to engage in dialectical reasoning should enable the coopetive categorization of attempts to outperform. Therefore:

H3a: The greater people's propensities for dialectical reasoning, the more likely they are to categorize someone attempting to outperform others in a team as cooperative.

In Hypothesis 1, I asserted that people in China have more dialectical reasoning than people in the United States. This is because dialectical reasoning is culturally conditioned and East Asian societies have more prevalent cultural artifacts emphasizing dialectical reasoning than Western societies. Because, as I just discussed, dialectical reasoning influences coopetive categorization, this suggests that coopetive categorization will also differ by natitonality. People in China, compared to people in the United States, should be more likely to seek ways to integrate cooperation and competition, and thus be more likely to discover behaviors that they believe are both cooperative and competitive. Consequently:

H3b: People in China are more likely than people in the US to categorize attempts to outperform as cooperative.

H3c: The relationship between national culture (China and the US) and categorizing attempts to outperform as cooperative is mediated by dialectical reasoning.

A complete theoretical model about the impact of national culture and dialectical reasoning on coopetitive categorization is presented in **Figure 3**.

DIALECTICAL REASONING AND REACTIONS TO COMPETITIVE BEHAVIORS

Whether dialectical reasoning influences coopetive categorization has implications beyond an individual's cognition. People use categories to guide their actions (Smith, 1989). In team interactions, people interpret others' actions and then use their interpretations to choose their responses (Gibson, 2001). Interpretations are particularly important for cooperation because the maintenance of cooperation within an interdependent team requires reciprocity (Fehr & Gintis, 2007; Koster & Sanders, 2006).

People reciprocate based on their interpretations of the others' actions, not the outcomes of those actions (Keysar, Converse, Wang, & Epley, 2008). Further, interpretations are categorical. Reciprocity implies responding not with exactly the same action but responding *in kind* (Gouldner, 1960), that is, with a response drawn from the same category. Thus, if team members interpret others' actions as non-cooperative, they are likely to respond with a non-cooperative act (Andersson & Peerson, 1999; Glomb & Liao, 2003). Taken together, it follows that if people perceive an act with features resembling their category of cooperation, they will interpret the act as cooperative. Consequently, they are more likely to respond by cooperating.

There are many types of behavior that people categorize as cooperation (Keller & Loewenstein, working paper). A particularly important kind of behavior that is often characterized as an indicator of cooperation within teams is knowledge sharing (Chatman et al., 2001; Gaertner, Pomare, Dovidio, Mann, & Murrell, 1990). Knowledge sharing occurs when a team member chooses to provide valuable information to other members of the team. Accordingly, if a team member observes one kind of cooperative behavior (e.g., team-focused effort), a team member can reciprocate by sharing knowledge. A team member can also refrain from knowledge sharing as a form of non-cooperative reciprocity in response to another behavior the person categorizes as non-cooperative (e.g., failing to compromise). Therefore, whether someone categorizes other members' attempts to outperform as cooperative or non-cooperative should influence whether someone reciprocates by sharing knowledge. Team members who believe that another member's attempt to outperform them is cooperative should reciprocate by sharing knowledge. Team members who believe that an attempt to outperform is non-cooperative will refrain from sharing knowledge. Therefore:

H4a: Team members who categorize attempts to outperform as more cooperative are more likely to respond to other team members' attempt to outperform by behaving cooperatively (sharing knowledge).

Dialectical reasoning should also have an impact on team members' reactions to competitive behaviors. As predicted in Hypothesis 3, team members with a high propensity to engage in dialectical reasoning should be more likely to categorize others' attempts to outperform as cooperative. Because categorization impacts team members' behavioral reactions, the impact of dialectical reasoning on categorization should translate into an effect on behavioral team members' behavioral reaction. Therefore, team members with a high propensity to engage in dialectical reasoning should be more likely perceive attempts to outperform as cooperative and consequently be likely to respond with a cooperative action. Therefore:

H4b: The higher their propensities for dialectical reasoning, the more likely team members are to respond to another team member's attempt to outperform by behaving cooperatively (sharing knowledge).

H4c: The relationship between dialectical reasoning and cooperative behavior is mediated by coopetive categorization (the categorization of attempts to outperform as cooperative).

The reciprocal behavioral reaction to an attempt to outperform by behaving cooperatively (or non-cooperatively) is not the only potential outcome of coopetive categorization. Another potential outcome is the attribution that people make to the other team members' behavior. In particular, coopetive categorization may impact whether team members perceive other members' intentions as cooperative (or non-cooperative). As one would expect, the intention to cooperate (or people's motivation to work towards

group goals) is a predictor of people engaging in cooperative behavior (De Dreu, Weingart, & Kwon, 2000; Weingart, Brett, Olekalns, & Smith, 2007). Critically, maintaining cooperative intentions are partially based on whether team members perceive others' intentions to be cooperative (Parks, Henager, & Scamahorn, 1996). Team members engage in "mind-reading" of others' intentions based on their observations of others' behaviors (Ames, 2004; LePine & Van Dyne, 2001). For example, when a member does not perform well on a task deemed feasible to accomplish, others are likely to attribute the member's lack of performance to a lack of motivation to work hard (Taggar & Neubert, 2004). Once a team member believes that another team member does not want to cooperate, the relationship between team members is difficult to restore (Johnson et al., 2006). Thus team members observe others' behaviors not only to gauge how they will reciprocate in the short term, but also as an indicator of others' intentions because these intentions are critical to maintaining group members' motivations to continue cooperating.

The "mind reading" process requires using an interpretation of another's behavior as an indication of their intentions. It is possible to believe that others are acting in a way that is perceived as non-cooperative (such as a lack of helping) without believing that the others do not want to cooperate. Someone could theoretically attribute a perceived lack of cooperation to situational constraints or cultural differences in behavior. However, in the absence of obvious cues that others are different, and because cooperation and competition are cultural categories that are highly likely to be taken-for-granted (Berger & Luckmann, 1967) and treated as natural facts (Gelman, 2004), I suggest that people are unlikely to attribute others' non-cooperative behavior to a difference in categorization. Instead, they are likely to believe failing to act cooperatively implies the person did not want to act cooperatively. Consequently, if team members categorize a behavior as

cooperative, they should perceive others' who take the behavior to have cooperative intentions. But if they categorize a behavior as non-cooperative, they should perceive the others' intentions as non-cooperative. Therefore:

H5a: Team members who categorize attempts to outperform as more cooperative are more likely to respond to other team members' attempts to outperform by perceiving the others' intentions as cooperative.

Because of the influence of dialectical reasoning on categorization, dialectical reasoning should also play an important role in people's perceptions of others' intentions. As Hypothesis 3 predicted, dialectical reasoning influences peoples' propensity to categorize attempts to outperform as cooperative. Because the categorization of attempts to outperform as cooperative (or non-cooperative) will influence people's perceptions of others' intentions, dialectical reasoning should have a similar effect on the perception of others' intentions as it does on knowledge sharing:

Therefore:

H5b: The higher team members' propensities for dialectical reasoning, the more likely they are to respond to another team member's attempt to outperform by perceiving the others' intentions as cooperative.

H5c: The relationship between dialectical reasoning and the perception of others' intentions is mediated by coopetive categorization (the categorization of attempts to outperform as cooperative).

A complete theoretical model of the impact of dialectical reasoning and coopetive categorization on cooperative behavior and perceptions of intentions is displayed in **Figure 4**.

Methods

In this study I predicted a set of hypotheses relating to national culture, dialectical reasoning, coopetive categorization and the reaction to competitive behaviors. First, I predicted that people in China would have higher dialectical reasoning than people in the US. Second, I predicted that team members, on average, would categorize the attempt to outperform others as more cooperative than the attempt to undermine others. Third, I predicted that dialectical reasoning would lead to more coopetive categorization and those in China will have more coopetive categorization, mediated by dialectical reasoning. Finally, I predicted that dialectical reasoning would lead to more knowledge sharing and a greater likelihood of perceiving others as cooperative, mediated by coopetive categorization.

To empirically examine the hypotheses laid out, I conducted a two-part laboratory study with participants in both the US and China. The first part of the lab study enabled me to extensively measure dialectical reasoning, categorization of potentially cooperative and competitive behaviors, and various controls. The second part of the lab study enabled me to generate a team simulation task and to manipulate the exact behaviors to which participants observed and responded.

PARTICIPANTS

Overall, 194 participants participated in this study.[2] Of the 194 participants, 94 participants were undergraduate students from a large public university in the United States. The remaining 100 participants were undergraduate students from a large public university in the People's Republic of China. In the United States, 62% of the participants

[2] Data was collected from an additional 75 participants, but their data is not included in the results of this study because they engaged in tasks that were beyond the scope of this dissertation. Additional participants' data was removed if they were not either native English-speakers or native Chinese-speakers.

were women. In China, 65% of the participants were women. In the United States, the average age of the participant was 20.3. In China, the average age of the participant was 21.2. In the United States and China, participants were majors in multiple disciplines from throughout the University. Participation in the study was voluntary. In the United States, the participants received one point of extra credit in a Management course (each representing 1/100 of semester grade) for participating in each part of the study. In China, the participants received 30 yuan (app. 5 USD) for participating in each part of the study.

STUDY DESIGN

The study consisted of two parts, separated by 1-2 weeks. During the first part, measures for dialectical reasoning, coopetive categorization, demographic controls and psychographic controls were measured. During the second part, behavioral and perceptual reactions to attempts to outperform were measured. The second part of the study involved a 2 (US and China) x 2 (baseline and others attempting to outperform) between-subjects design. The hypothesized effects concerning behavioral and perceptual reactions were specific to attempts to outperform; the baseline condition provides the basis for showing that the simulation itself is not generating different patterns of behaviors and perceptions, but that it is specifically the presence of attempts to outperform that are generating differences. Thus the baseline condition only engaged in the second part of the study, and given the difficulty of cross-national data collection and the expectation of no differences of interest, fewer participants (25 participants per nation) were devoted to establishing the baseline patterns.

TRANSLATION OF MATERIALS

The materials included both original materials generated for the study and material from other sources. All original materials (including scale items and simulation

text) were initially developed in English, translated into simplified Chinese and back translated into English. The back-translated version was included in a pilot study, where no differences were found in results. Therefore, only the original English-language version of the study was included. For the Chinese-language version, the materials were translated by a Native-Chinese speaker and assessed for reliability by an additional Native Chinese speaker and a Native English speaker who is fluent in Chinese. When sourced materials were already available in Chinese (e.g., scale items for dialecticism), the sourced materials in Chinese were included. Otherwise, Chinese translations were generated using the same procedure as for the original materials.

PROCEDURE AND MATERIALS IN PART 1

Participants engaged in a series of questions presented on a computer. The details of the questions themselves are presented later, in the section on measures. The participants were first instructed to imagine themselves in a team of people working on a project. They were then asked to rate a set of competitive behaviors used to measure participants' categorizations of attempts to undermine and attempts to outperform. They were given a semantic association test, used as a control to measure whether they believed cooperation and competition were opposites. The participants were also asked questions measuring dialecticism and two control variables, independent self-construal and group-collective self-construal. All items from the three scales were combined and presented in a random order. Two filler tasks were presented between the three sections to reduce demand effects. The order of presentation of the three sets of materials was counterbalanced across participants, and no order effects were found. Demographic questions were presented at the end.

PROCEDURE AND MATERIALS IN PART 2

Participation in the second part of the study occurred 1-2 weeks after Part 1. There were three activities in Part 2. The first was a brainstorming task, the second was a computer simulation and the third was a post-simulation questionnaire.

Brainstorming Task. As discussed earlier, the categorization of attempts to outperform as cooperative is contingent on a team member believing that the act is beneficial for group gain. Therefore, in order for a team member to perceive an attempt to outperform as cooperative, they must think about the potential group benefit of an attempt to outperform. This requires that the team member believes that they are part of a team, which requires some amount of entitativity (Campbell, 1958), a perceived state of oneness with other members of a group. Because subsequent team-based interactions were simulated, the need for providing entitativity was particularly important for this task. Two activities were implemented to generate entitativity in all teams. First, participants were placed in team of three and asked to introduce themselves and discuss their academic and personal backgrounds. This established socialization, which has been found to influence entitativity (Moreland & McMinn, 1999). Immediately afterwards, the participants were asked to participate in a brainstorming task, as brainstorming has also been found to influence entitativity (Kramer, Kuo & Dailey, 1997). The brainstorming task was to list up to 12 activities that a new firm can do to successfully launch a new product. They were given five minutes for this task. The brainstorming task is displayed in **Appendix A**.

Computer Simulation. The next activity was a computer simulation of a sales team task. The goal of the computer simulation was to provide an interactive team setting in which attempts to outperform could be manipulated and reactions to the attempts to outperform could be measured. To provide a controlled manipulation, I designed a

computer based exercise that simulated the actions of the other team members. The simulation was an original design because no preexisting design included simultaneous manipulations of cooperative and competitive behaviors within a team context.

The main task for the participants was to sell African teas. Each participant managed a stand with four kinds of tea. In the exercise, there were two other computer-simulated team members, supposedly played by the two other people who participated in the brainstorming task.[3] The responsibility of each team member was to order an optimal number of cups of tea each day for 25 days. Too many ordered cups would incur costs due to waste and too few ordered cups would incur costs due to reduced sales.

At the beginning of the simulation, participants were placed at separate computer terminals. They were given seven minutes to read instructions. The instructions included a description of the overall task. The instructions indicated participants had mixed motives. The participants' goal was to help the team perform well and to perform well individually. The instructions are presented in **Appendix B.**

After reading the instructions that explained the task, the participants were asked to send messages to the other team members. They then received messages from the other team members. In both the baseline and attempt to outperform conditions, the team members mentioned that they wanted the team do perform well. In the attempt to outperform condition, the computer-simulated team members also mentioned that they wanted to perform better than the other team members. The content for the messages were as follows for each team member:

Team member A: "I hope we all do well as a team. I also hope that I am the best in the team."

[3] A manipulation check at the end of the study demonstrated that most participants believed that the team members were part of the same team as in the brainstorming task. Data from the few participants that didn't believe the team members were part of the same team were dropped from analysis.

Team member B: “I want us all to do well, but I plan on beating both of you.”

The simulation exercise was a fixed time of 30 minutes for 25 rounds of decision making. Each day, one of the three team members received a message with information that would aid in optimizing sales and were given the option of forwarding the message to the other team members. The simulated team members forwarded every message to both team members. The participant had eight opportunities to forward messages to one or both team members. Each team member could also view a financial summary for all team members and the orders selected by all team members. In the attempt to outperform condition, the computer-simulated team members viewed the participant’s information (participant’s were given notice that their information was being viewed) frequently, and much more often than in the baseline condition. A screen shot of the simulation with an explanation for each item is presented in **Appendix C.**

Post-simulation questionnaire. After the computer simulation, each participant completed a computer-based questionnaire about the simulation. The questionnaire included 16 questions about each of the other (simulated) team members, followed by 10 questions about their own actions or experiences during the computer simulation. The order of questions within each set was randomized.

MEASURES

Categorization Variables

In Part 1, each participant was asked three times to rate a list of 25 behaviors that a team member engaged in. These ratings were used to measure the categorization of attempts to outperform (4 behaviors) and attempts to undermine (4 behaviors).[4] All 25

[4] Four items referred to “outhelping” behaviors (beyond the scope of this study). The remaining 13 items indicated a range of behaviors from Keller & Loewenstein (working paper). They were included as filler items to ensure that the participants had a basis of comparison for rating the target behaviors about attempts to outperform and attempts to undermine.

behaviors were presented together for each question and the order of the behaviors displayed were randomized within each question. The three questions were “does this behavior indicate cooperation, non-cooperation or neither?”, “does this behavior indicate commitment to the group, non-commitment to the group, or neither”, and “does this behavior indicate competition, non-competition, or neither?” The items related to “commitment to the group” were used as a filler question to ensure that there were no demand effects over not being able to answer the same way for the same behavior for multiple questions. The order of the three questions was counterbalanced (with cooperation first and competition last, or the reverse), and no significant differences were found.

Each participant was asked to rate each of the 25 behaviors on a five-point-scale. For each behavior, participants were asked if the item indicated (with x being instantiated by cooperation, competition or commitment to the team): 1 = “a strong indicator of non-x”, 2 = “a weak indicator of non-x”, 3 = ”neither an indicator of x or non-x”, 4 = “a weak indicator of x” or 5 = “a strong indicator of x”.

Categorization of Attempts to Outperform as Cooperation (Coopetive Categorization). Four items represented instances of a team member attempting to outperform others. They included: 1) “A team member attempts to outperform other team members”, 2) “A team member gauges others' performance and makes sure that the he or she is doing better that the others”, 3) “A team member tries to get the quality of the his or her work to be better than the quality of others’ work”, and 4) “A team member tries to make sure that he or she isn't outdoing others in the team” (reverse-coded). These behaviors were consistently categorized as indicating competition (α=.81, M=4.06, SD=.55). The aggregation of participants’ responses about whether these attempts at

outperforming behaviors indicated cooperation was used to measure coopetive categorization (α=.73).

Categorization of Attempts to Undermine as Cooperation. Four items represented instances of a team member attempting to undermine others. They included: 1) "A team member attempts to undermine other team members", 2) "A team member tries to perform better by making sure other team members perform worse", 3) "A team member request that another team member gets demoted in order for he or she to get promoted", 4) A team members makes sure that his or her gain is not at the expense of other team members' loss" (reverse coded). An aggregation of the results from ratings about whether the items indicated cooperation on the five-point-scale was used to measure whether these attempts at undermining behaviors indicated cooperation (α=.77).

Dependent Variables from the Simulation

Cooperative Behavior. For cooperative behavior (knowledge sharing), I counted the number of times that the participant forwarded a message during the computer simulation. Each participant had eight opportunities. Therefore, the range is 0-8.

Perception of Others' Intention to Cooperate. To measure participants' perceptions the other team members' intentions, they were asked whether each of the other team members "intended to cooperate". The two items (one for each simulated team member) were then aggregated (α=.82).

Independent Variables

Dialectical Reasoning. The measure for dialectical reasoning was the Dialectical Self Scale, developed by Spencer-Rodgers et al (2008) and used in Spencer-Rodgers et al (2009). Both English and Chinese language scales were available from the authors and used as the measures. There were 36 items on a 7-point scale, covering the three areas of

tolerance for contradiction, *cognitive change* and *behavioral change*. All 36 items were aggregated (α=.74).

National Culture. A dummy code of 1 was applied to all Native English speaking US citizens. A 0 was applied to all Native Chinese speaking Mainland Chinese citizens.

Control Variables for Coopetive Categorization

Semantic Association of Cooperation and Competition. An alternative explanation for a person categorizing attempts to outperform as cooperative is that they do not believe that cooperation and competition are opposites. Therefore, they are free to think about behaviors as both cooperative and competitive without concern for any antonymic relationship. To control for this possible explanation, each participant was given a semantic association test (Herman, 1999) during Part 1. Each participant was asked to rate the level of semantic association on a five-point scale for 36 word pairs as quickly as possible. Among the 36 pairs of words, one pair was "cooperation" and "competition". Other pairs included 16 pairs of words that represented a range of synonymous, antonymous and unrelated words as measured by Herman (1979). An additional 19 business-related words were added for face validity, such as "bull market" and "bear market". An example of a synonym pair and an antonym pair were first presented, followed by the remaining 34 pairs in random order. The measure for semantic association of cooperation and competition was based on the participant's score for this single item on a five-point scale.

Independent Self Construal. An alternative explanation for a person not categorizing an attempt to outperform as cooperative is that the person has a strong view of the self as an individual (Markus & Kitayama). As a result, the person is sensitive to

the impact of any behavior that places the individual in a lower status than others. Therefore, they may believe that a competitive behavior can be cooperative, but they do not believe that an attempt to outperform is cooperative because they believe that a lowering of status indicates non-cooperation. Therefore, I also added the six-item, seven-point-scale measure for independent self-construal (Singeles, 1994).

Group-Collective Self Construal. An alternative explanation for a person categorizing an attempt to outperform as cooperative is that the person has a strong view of the self as part of a collective (Gabriel & Gardner, 1999). As a result, the person is concerned about the impact of attempts to outperform on the group, and pays close attention to the group-level outcome. Therefore, I also added the six-item, seven-point-scale measure for group-collective self-construal (Gabriel & Gardner, 1999).

Demographic Variables. Age and Gender were also included as demographic variables that often influence behavior.[5]

Control Variables for Reaction to Competitive Behaviors

Perceived Difficulty of Task. An alternative explanation for a person not reacting to others' behaviors in a cooperative way was that the person found the task to be difficult. As a result, participants might not have forwarded messages simply because, for example, they did not understand the task itself or because generating orders required their full attention so they failed to notice some of the messages. A single 7-point-scale item was included in the post-simulation questionnaire to denote whether the person had difficulty with the task. The question was "how difficult was the exercise today".

[5] Data about English ability (for Chinese participants), international experience and work experience were also collected, but their relationship to the variables of interest is beyond the scope of this study. Additionally, native language was used as a screen (only native speakers were included in the sample).

Manipulation of Attempts to Outperform

The manipulation for attempts to outperform was applied to both computer-generated confederates ("other team members"). The manipulation of other team members' attempts to outperform was conducted in three ways. First, when the participant received an initial message from each of the other team members after the participant sent an initial message, the messages signaled an attempt to outperform. For example, one team member said "I hope we all do well. Of course, it would be nice if I did the best". Second, each team member had two reports ("yesterday's results" and "cumulative results". Each team member could see whether other team members were looking at their reports. In the attempt to outperform condition, the other team members often looked at the participant's report (they rarely did so in the baseline condition). Third, during the task, each team member would copy numbers from three out of the four orders of the most profitable team member. The fourth order would be changed to perform better than the top performer the previous day. In the baseline condition, the simulated team members generated orders independently and without copying.

RESULTS

DESCRIPTIVE RESULTS AND CROSS-NATIONAL COMPARISONS

Means and Standard Deviations are presented separately for the US and China in **Table 1**. Similar to the results in previous studies on Dialectical Reasoning (e.g., Spencer-Rodgers et al, 2009), those in China had, on average, a higher propensity for dialectical reasoning compared to those in the US, thus supporting Hypothesis 1.

For the comparison of competitive behaviors, overall, participants from both countries categorized attempts to outperform (M=3.21) as more cooperative than attempts to undermine (M=1.52), $t(143)= 21.20$, $p<.001$, thus supporting Hypothesis 2. There were no differences between attempts to outperform (M=4.06) and attempts to undermine (M=3.93) in their categorization as competitive, $t(144)=1.29$, *ns*.[6] These results provide evidence that the categorization of attempts to outperform as cooperation can indicate coopetive categorization, and therefore the term "coopetive categorization" will subsequently be applied to the categorization of attempts to outperform as cooperation.

There were cross-national differences in the categorization of attempts to outperform as cooperative. Participants in China ($M_{CH}=3.70$), on average, categorized attempts to outperform as more cooperative, compared to participants in the US ($M_{US}=2.68$), $t(143) = 10.50$, $p<.001$. In fact, in China, attempts to outperform were, on average, cooperative, $t(143) = 12.96$, $p<.001$, whereas in the US, attempts to outperform where, on average, non-cooperative, $t(143)=-3.94$, $p<.001$.

The simulation showed that participants from China and the US reacted differently to attempts to outperform. The Chinese, relative to those in the US, were more likely to react by sharing knowledge ($M_{CH}=5.12$, $M_{US}=3.54$, $t(143) = 4.41$, $p<.001$) and to

[6] The contrasts between the two behaviors were significant in the US and China. I combined the samples for clarity in results.

perceive others' as having the intention to cooperate (M_{CH}=5.77, M_{US}=5.17, t(143) = 3.34, p<.001). Thus the behavioral and perceptional reactions to attempts to outperform are consistent with the hypotheses.

For control variables, there were no between-nation differences in semantic association (M_{CH}=1.88, M_{US}=1.84, t(143) = 0.26, *ns*). In both the US and in China, cooperation and competition were, on average, antonymic (below 3 on the scale) (t(143) = 13.47, p<.001). Similar to the results in previous studies on self-construal, those in the US, on average, had a higher independent self-construal (M_{CH}=4.49, M_{US}=5.31, t(143) = 7.21, p<.001). Those in China, on average, had a higher group-collective self-construal (M_{CH}=5.23, M_{US}=4.63, t(143) = 3.94, p<.001).

First-order Pearson correlation coefficients for correlations between variables for the complete sample (US and China) are presented in **Table 2**.

RESULTS FOR COOPETIVE CATEGORIZATION

A stepwise linear regression model was used to analyze the results for Hypotheses 1 and 2, which predict the impact of dialectical reasoning and national culture (US/China) on coopetive categorization. Results from the regression are presented in **Table 3**. There are four models in the regression. The first includes only controls, the second includes dialecticism, the third includes national culture and the fourth includes both dialecticism and national culture. Dialecticism predicted coopetive categorization, supporting Hypothesis 3a. National Culture also predicted coopetive categorization, supporting Hypothesis 3b.

To test for Hypothesis 3c, the mediation effects of dialectical reasoning, I ran a bootstrapped test of an indirect effect of national culture on coopetive categorization through dialectical reasoning (Preacher & Hayes, 2005). The mean indirect effect was 0.12 (95% CI: 0.01-0.22), $p<.05$, providing evidence of mediation and therefore supporting Hypothesis 3c. Therefore, national cultural differences in whether people categorize attempts to outperform as an indicator of cooperation are attributed to differences in dialectical reasoning. Moreover, as the model with both dialectical reasoning and national culture in Table 3 demonstrate, dialectical reasoning predicted coopetive categorization, even when controlling for national culture. Therefore, people's general propensity to engage in dialectical reasoning also explains variance within each national culture.

RESULTS FOR REACTIONS TO COMPETITIVE BEHAVIORS

Manipulation Effects

To check whether there were any effects of the manipulation of attempts to outperform, each participant rated the extent to which each of the other team members attempted to outperform other team members. I aggregated the two items ($\alpha=.72$). The participants who received the manipulation (and whose results are represented in this study) rated the extent to which others were attempting to outperform much higher than the sample of 50 in a baseline condition ($M_{outperform}$ = 5.45, SD= 1.15 $M_{baseline.}$= 2.83, SD=1.35, $t(199)= 13.26$, $p<.001$).

The impact of the manipulation on knowledge sharing differed by national culture, reflecting differences between the two national cultures in coopetive categorization. For the sample in China, there were no differences in knowledge sharing between the baseline and manipulated conditions ($M_{outperform}$ = 5.12, SD= 2.28 $M_{baseline.}$=

4.95, SD=1.85, t(99)= 0.16, *ns*). There was no evidence that the presence of attempts to outperform lowered Chinese participants' knowledge sharing relative to the absence of attempts to outperform. For the sample in the US, there was a significant drop in knowledge sharing in the manipulated condition compared to the baseline condition ($M_{outperform}$ = 3.54, SD= 2.03 $M_{baseline}$.= 4.95, SD=1.68, t(93)= 3.10, p=<.001). Thus the US participants were notably less likely to share knowledge specifically when team members attempted to outperform. The baseline rate of US participants' knowledge sharing was no different than the Chinese participants' baseline rate; so the difference in knowledge sharing the attempts to outperform condition is not attributable to a general difference in willingness to share knowledge by nationality, but is specific to reacting to attempts to outperform.

Results for Hypotheses

Before testing the hypotheses regarding knowledge sharing and perceptions of cooperative intentions, I tested whether there were any significant effects of brainstorming team membership on these variables and found no significant results. For simplicity of presentation of results, I collapsed all team-level results and chose to use a stepwise linear regression model instead of a hierarchical linear regression model with team affiliation included. The stepwise linear regression model results are displayed in **Table 4** for cooperative behavior. The first model is the base (only control variables), the second includes coopetive categorization, the third includes dialectical reasoning and the fourth includes both dialectical reasoning and coopetive categorization. To control for heterogeneity attributed to unobserved national cultural differences, national culture was included as a control variable. Because of difficulty in the task potentially influencing

how a participant is able to forward messages (and thus share knowledge), I controlled for that variable as well.

The regression found that coopetive categorization predicted knowledge sharing, thus supporting Hypothesis 4a. Dialectical reasoning also predicted knowledge sharing, thus supporting Hypothesis 4b. Finally, I ran a bootstrapped test of an indirect effect of dialectical reasoning on knowledge sharing through coopetive categorization (Preacher & Hayes, 2005). The mean indirect effect was 0.13 (95% CI: 0.02-0.35), $p<.05$, providing evidence of mediation and supporting Hypothesis 4c. Therefore, dialectical reasoning enables team members to maintain knowledge sharing when others attempt to outperform to outperform by facilitating the categorization of attempts to outperform as cooperative.

I used a similar analysis for the results of perceived intention to cooperate to test hypotheses 5a and 5b. I used the same base variables and the same independent variables, but with perceived intention to cooperate as the dependent variable. Results from the regression analysis are displayed in Table 5.

The results from the regression analysis found that coopetive categorization did predict perceived intention to cooperate, supporting Hypothesis 5a. Dialectical reasoning also predicted perceived intention to cooperate, supporting Hypothesis 5b. Finally, I ran a bootstrapped test of an indirect effect of dialectical reasoning on perceived intention to cooperate through coopetive categorization (Preacher et al., 2005). The mean indirect effect was 0.08 (95% CI: 0.01-0.20), $p<.05$, providing evidence of mediation and supporting Hypothesis 5c. Therefore, dialectical reasoning prevents team members from thinking that others' intentions were not to cooperate when they attempt to outperform them. It likely does so in part by leading people to believe that attempting to outperform is cooperative.

DISCUSSION

The main purpose of this study was to examine the relationship between dialectical reasoning, national culture, coopetive categorization and the behavioral and perceptual reactions to competitive behaviors within a team. I confirmed cross-national differences in dialectical reasoning. I identified a type of competitive behavior that could potentially be categorized as both cooperative and competitive, attempts to outperform other team members, and contrasted its categorization with another behavior, attempts to undermine. I then assessed whether there were national cultural differences in whether people categorized attempts to outperform as both cooperative and competitive, and whether these differences were attributed to differences in dialectical reasoning. I then assessed whether dialectical reasoning, through its influence on categorization, impacted people's reactions to others' attempts to outperform. I examined two reactions; knowledge sharing and perceptions of others' intentions to cooperate.

The results of the study provided empirical evidence that dialectical reasoning, a culturally-influenced reasoning style, influenced coopetive categorization, and this influenced people's reactions to competitive behaviors within the team. People with high levels of dialecticism, particularly those in China, were more likely to categorize a team member's attempts to outperform as an indicator of cooperation. Moreover, when others attempted to outperform them, they were more likely to continue to share knowledge with them and perceive them as wanting to cooperate with them. Therefore, the results suggest that there is an underlying culturally-influenced reasoning about opposites that influences how team members think about the relationship between cooperation and competition and how team members behave when confronting a simultaneous instance of cooperation and competition.

IMPLICATIONS FOR RESEARCH

Implications for Research on Cooperation and Competition in Teams

The results of the study have immediate implications for research on cooperation and competition within teams. It is well established that cooperation within teams can facilitate team processes and generate effective team outcomes. For example, cooperation includes the behaviors of knowledge sharing and helping, two behaviors that are integral for team outcomes (Campion, Medsker, & Higgs, 1993; Flynn, 2006). It is less well established but also supported that competition within teams can increase individual effort towards team goals, and thereby also generate effective team outcomes (Fletcher, Major, & Davis, 2008). Consequently, many teams involve mixed motives (e.g., Komorita & Parks, 1995). The results from this study suggest that people with higher dialectical reasoning are more likely to maintain cooperation when others compete. They are less likely to treat cooperation and competition as "trade-offs". Therefore, people with higher dialectical reasoning may be more suitable as members of mixed motive teams. As a result, teams with mixed motives and members with higher overall propensities for dialectical reasoning should perform better than teams whose members have a mixture of propensities for dialectical reasoning (because of the potential for misunderstandings and conflict) as well as teams whose members have a low propensity for dialectical reasoning (because this should force tradeoffs). The relationship between team incentives, composition of dialectical reasoning styles and team performance is an exciting area for future research.

The national cultural differences in dialectical reasoning have particular implications for research on the role of culture in cooperation and competition within teams. Previous literature has looked into the relationship between national culture and cooperation, focusing on differences in individualist vs. collectivist values. Some have

attributed more cooperation to collectivism (Eby & Dobbins, 1997; Kirkman & Shapiro, 2001; Wagner, 1995). Others have attributed more cooperation to individualism (Yamagishi, 1988a). And still others have proposed moderating factors such as identity (Chen et al. 1998) and the type of sanctioning system (Chen & Li, 2005; Yamagishi, 1988b). The results from this study suggest that we think about the relationship between national culture, cooperation and competition differently. As the results suggest, people in China are less likely to react to competitive behaviors by reducing their level of cooperation. These effects were not a result of a general propensity to cooperate, as there were no differences between the national cultures in their general propensity to cooperate. Instead, differences in cooperation were associated with differences in dialectical reasoning. Therefore, cultural differences may not be limited to differences in cultural values, but in the reasoning about seemingly opposite values. Future research on the relationship between national culture and cooperation should therefore incorporate reasoning style.

Implications for Research on Diversity in Teams

The results that revealed systematic differences in the perceived intention to cooperate have particular implications for research on diversity in teams. Previous literature on diversity on teams has pointed to a distinction between surface-level and deep-level diversity (Harrison, Price, & Bell, 1998; Harrison, Price, Gavin, & Florey, 2002). Deep-level diversity is unobservable, whereas surface-level is observable (e.g., age, race, gender). First, the results of the study indicate that dialectical reasoning influences how people react to competitive behaviors. Future research can address whether dialectical reasoning also influences whether people engage in competitive behaviors. If people with high dialectical reasoning are more likely to believe that a

competitive behavior can also be cooperative, they may be more likely to engage in competitive behaviors, as they aren't constrained by the belief that it hampers cooperation. However, as the results indicate, people with low dialectical reasoning are likely to respond by lowering cooperation. Future research can examine whether teams with higher diversity in dialectical reasoning (both high and low members) cooperate less than teams with lower diversity in dialectical reasoning (only high or only low members.

Second, people make attributions about deep-level differences within the team based on stereotypes associated with surface-level diversity (Fiske & Neuberg, 1990). The stereotyping often leads to relational conflict among team members (Mohammed & Angell, 2004; Pelled, Eisenhardt, & Xin, 1999). The identification of a difference in the categorization of competitive behaviors in this study presents a potential form of deep-level diversity within teams, as people do not only interpret competitive behaviors differently, but also react to competitive behaviors differently. The systematic differences in categorization attributed to national culture suggest that potential deep-level diversity in coopetive categorization may be correlated with surface-level diversity association with nationality.

Moreover, the results also found that people who categorize attempts to outperform as non-cooperative are also more likely to believe that those performing the act have non-cooperative intentions. Given the influence of stereotyping on attributions to behavior in teams, there is also a potential for people to make further attributions of non-cooperativeness to nationality. This can have implications for cross-national teams. If people from China are more likely to engage in coopetive behavior in teams because they engage in coopetive categorization, people from the US who do not share that categorization may associate non-cooperativeness with nationality, thus creating national-based fault lines in cross-national teams (Earley & Mosakowski, 2000; Lau &

Murnighan, 2005). Future research can address this issue by exploring the impact of coopetive categorization and cross-national diversity on stereotyping, relational conflict and fault line formation.

Implications for Research on Culture in Teams

The results also have broader implications for the study of culture in teams. The systematic cross-national effects associated with dialecticism suggests that there is an exogenously developed reasoning style that impacts how people think and behave within teams. People acquired a basic approach to reasoning about opposites outside of the team context, and this impacted how people behaved within a team context. This provides a new approach to looking at how national culture impacts behavior in teams, by exploring basic reasoning styles associated with opposites. Future research can explore additional areas within teams that involve similar reasoning style variance, such as team member categorizations of superior-subordinate and peer relationships or task and non-task relationships.

But the extent to which any exogenous effect overrides endogenous factors is an empirical question that requires further inquiry. Future research can assess whether there are any endogenous factors that may moderate the effects of dialecticism on behavior within teams. For example, team reflexivity associated with interpretations of competitive behaviors may reduce the effect of team member's categorization of competitive behaviors on their reactions to competitive behaviors at the time of occurrence (Gurtner, Tschan, Semmer, & Nägele, 2007; Lewis, Belliveau, Herndon, & Keller, 2007). Individuals within the team may have greater cultural intelligence (Earley et al., 2003; Janssens & Brett, 2006), an understanding of differences in cultures and the motivation to change behavior accordingly. People with higher cultural intelligence may assess

whether their interpretations are attributed to cultural differences in understanding before reacting to others' behaviors.

LIMITATIONS

Some limitations should be considered when interpreting the results of the study. First, the study was conducted within the laboratory, and therefore was not able to include influences of managers, organizational culture, and other environmental factors that may influence how individuals behave within a team. A laboratory setting was a more appropriate setting to control the task environment and to measure immediate participant reactions and perceptions. Future research can address this limitation by exploring the role of dialectical reasoning and coopetive categorization in a natural team setting, including an examination of organizational or managerial influences.

Second, the behaviors that other team members engaged in were simulated by a computer. The purpose of a laboratory setting with simulated team members was to provide a controlled manipulation of particular behaviors and to measure reactions accordingly. This control was necessary to measure direct reactions and perceptions. Future research can address this limitation by exploring natural team interactions and measuring attempts to outperform instead of manipulating the behavior.

Third, the study did not include variance in individual-based or team-based incentives for cooperation. Future research can explore the moderating effects of incentives to determine the robustness of the impact of categorization when the participants have varying levels of incentives themselves. The study also did not measure variance in individual dispositions for cooperating and competing. Future research can address potential interaction effects between people's categorization of cooperation and their cooperative and competitive value orientations.

Finally, national cultural differences were limited to a cross-national comparison of the US and China. Future research can explore additional national cultures that may vary in their amounts of dialectical reasoning or related forms of culturally-influenced metacognition. Additional future research can explore other forms of cultural influence, such as organizational or professional culture.

CONCLUSION

To conclude, how team members think about other team members' actions and the consequences of those thoughts may be influenced by basic reasoning styles that are acquired through cultural experience exogenous to the immediate team context. In this study, I found that one culturally-influenced reasoning style in particular, dialectical reasoning, influenced how people categorize competitive behaviors, how they react to competitive behaviors and how they perceived others acting competitively. This study therefore demonstrates that team cognition research can be expanded to encompass an understanding of the environmental factors that influence basic metacognitive processes.

STUDY 2: CULTURE, COOPETIVE CATEGORIZATION AND COOPETITION IN WORKING RELATIONSHIPS

Introduction

In organizations, people compete with each other over resource allocations, promotions, and other valuable outcomes and at the same time they also cooperate with each other in committees, task forces, and teams to coordinate the production of work. The necessity for people to both compete and cooperate poses challenges that are particularly acute in knowledge-based organizations (Grant, 1996). The term "coopetition" was coined to capture the simultaneously cooperative and competitive behavior required in many contemporary organizations (Tsai, 2002).

Recent research has found that coopetition – the co-occurrence of competition and cooperation -- can help performance in organizations (Luo, Slotegraaf, & Pan, 2006). But research on organizations has traditionally treated cooperation and competition as two opposing categories, such as in the contrast between a cooperative or competitive relationship (Deutsch, 1949; Tjosvold, 1984), the contrast between a cooperative or competitive choice (Komorita & Parks, 1996), and the contrast between a cooperative (cohesive) or competitive (structurally equivalent) position within a social network (Burt, 1987; Kilduff & Oh, 2006). The conceptualization of cooperation and competition as opposites is pervasive, including in discussions of organizational relationships, inter-firm relations (e.g., Lado, Boyd & Hanlon, 1996), and international affairs (e.g., Esty, 1998).

To the extent that a social convention that treats cooperation and competition as opposites permeates people's own experiences within organizations, a major stumbling block to the emergence of coopetive working relationships is likely to be deeply ingrained habits of thinking about competitive and cooperative behaviors as opposites. This ingrained differentiation of competition and cooperation may be particularly

characteristic of people in Western societies (cf. Fruin, 1992). Western cultural traditions emphasize making distinctions between seemingly opposite phenomena, whereas Eastern cultural traditions emphasize integrating seemingly opposite phenomena (Chen, 2008; Norenzayan et al., 2002; Peng et al., 1999; Spencer-Rodgers et al., 2004). Therefore, in this paper, I examine whether people's propensity to categorize competitive behaviors as non-cooperative relates to people's networks of working relationships. I also examine whether systematic differences in categorization and associated effects on working relationships can be attributed to national cultural differences.

This study aims to contribute to our understanding of cognition and culture in network relationships. First, I address a gap in our understanding of the role of cognition in network relationships. Previous literature on cognition in social networks has tended to focus on peoples' perceptions of their network (see Borgatti & Foster, 2003 for a review). For example, Kumbasar, Romney & Batchelder (1994) found cognitive biases in people's perceptions of how central they are in their network. Other research has looked at the cognitive mechanisms that people use to understand the structural features of the networks they are embedded in (e.g., Janicik & Larrick, 2005) Less attention has been made on the impact of people's categorization of relational behaviors on the content of network ties. I address this gap by focusing on how the people's categorization of competitive behaviors might affect the relationship between cooperation and competition in their network of working relationships. Second, I address a gap in our understanding of the role of national culture in networks of working relationships. Most previous literature on the role of national culture in networks has focused on people's propensity to engage in informal networks, such as research on *guanxi* networks in China (e.g., Park & Luo, 2001). I address this gap by examining how national culture may influence network relationships through the culture's influence on categorization.

COOPETIVE CATEGORIZATION

At the center of my theorizing is that people use categories to guide their perception and behavior. Categories are knowledge structures that group sets of referents, usually because they are similar in some way (e.g., share a common appearance, function, or underlying essence; Murphy, 2002). Categories provide a critical source of cognitive economizing, enabling people to decrease the amount of information required for making a decision by connecting past experiences to present situations and providing inferences to direct action (Smith, 1989). Brought to the context of working relationships, categorization is important because an overall categorization of a working relationship facilitates understanding and reacting to complex series of behaviors (Wageman, 1995). Each instance of behavior within a relationship provides an occasion for people to interpret and make choices about how to behave, including how to demonstrate their intentions towards the other. People's perceptions of their relationships are based in part on their initial motivations, and also incorporate their interpretations of the ensuing behaviors occurring over the course of their relationships. I view "cooperation" and "competition" as important categories that people use to interpret behaviors, guide responses, and shape inferences about their overall working relationships.

Treating cooperation and competition as categories allows for variation in whether a particular behavior could be a member of both, one or neither categories. This view is related to Jackson and Dutton's (1988) study of the relationship between *threats* and *opportunities*. They found that managers can categorize environmental issues as both threats and opportunities, exclusively as threats, exclusively as opportunities, or neither as threats nor as opportunities. Similarly, if people in a working relationship have two distinct, orthogonal categories of "cooperation" and "competition", they have the potential to categorize the other person's behavior as cooperative and competitive (i.e.,

coopetive), exclusively cooperative, exclusively competitive or neither cooperative nor competitive. I define a propensity to categorize others' behaviors as both cooperative and competitive as *coopetive categorization*. People who categorize others' behaviors as both cooperative and competitive are high in *coopetive categorization,* whereas people who categorize all competitive behaviors as non-cooperative (and vice-versa) are low in coopetive categorization.

The range of potential behaviors that could indicate cooperation is immense—including any pro-social behavior that benefits the collective (i.e., the organization) or limits harm to the collective (Argyle, 1991; Tyler, 2002). For example, behaviors that can indicate cooperation include helping, sharing, communicating, and exerting effort, each of which can itself manifest in innumerable ways. Competition also applies to a wide range of situations and behaviors concerned with relative positioning for advancing status or material gain (Johnson et al, 1989).

Using the core features of cooperation and competition just discussed, I propose two kinds of competitive behaviors, *attempts to outperform* and *attempts to undermine*, that are intended to differ in how readily they could be categorized as cooperation and as competition. I define attempts to outperform as behaviors that are intended to promote an organizational member's standing through increasing their own performance. For example, an employee may try to finish a project faster than others to stake a claim that he or she is the hardest worker in the entire company. I suggest this is a type of competitive behavior because it has a core feature a concern for relative standing. I also suggest this type of behavior could be perceived as cooperative because such actions need not cause harm to other colleagues or to the organization as a whole—they should in fact be able to help the organization's performance.

In contrast, I define attempts to undermine as behaviors taken to increase some organizational members' relative standing by harming the performance of other colleagues. For example, a colleague might attempt to undermine others by providing them with false information that if used would lead them to take poor actions. This behavior seems likely to hurt the organization overall, especially given that other colleagues are likely to respond to the attempt to undermine by engaging in even more harmful acts, creating a tit-for-tat downward spiral (Andersson et al., 1999; Glomb et al., 2003). Therefore, attempts to undermine are likely to be perceived as competitive, and because they should also be harmful to the organization as a whole, they should not be perceived as cooperative.

The distinction between attempts to outperform and attempts to undermine is related to a prior distinction in the social interdependence literature that also distinguishes between more and less harmful forms of competition (Stanne et al., 1999). That distinction is between zero-sum and appropriate competition. Zero-sum competition is defined as situations in which one team member wins and all others lose. Appropriate competition is defined as competition subject to the following stringent limitations: winning is relatively unimportant, all members have an equal chance to win, there are clear rules, and members can monitor each others' performance (see also Tjosvold et al., 2003). The distinction I draw between attempts to outperform and attempts to undermine places many fewer restrictions on relevant situations, and so are relevant to a greater array of outcomes. Attempts to undermine are somewhat like zero-sum competition, except that it is possible for attempts to undermine lead to lose-lose outcomes, not just win-lose outcomes. Attempts to outperform are somewhat like appropriate competition in emphasizing the possibility for collective gains, but it only requires the monitoring assumption. Thus I rely on attempts to outperform and attempts to undermine as types of

competition because they apply more broadly than zero-sum and appropriate competition, and because they better fit a category-based approach.

COOPETIVE CATEGORIZATION AND WORKING RELATIONSHIPS

In addition to categorizing behaviors, people also categorize their relationships with others (Baldwin, 1992), including their working relationships with others in organizations (McKnight, Cummings, & Chervany, 1998). There are many ways to categorize working relationships, but because of the ubiquity of cooperation and competition in organizational relationships (Deutsch, 1949; 1973), "cooperation" and "competition" are categories that are likely to be used as categories for working relationships.

When categorizing people's relationships, people make inferences based on others' behaviors (Ames, 2004). If a person perceives another person's behavior as cooperative, they are likely to believe that the person wants to cooperate. When the working relationship involves interdependence (Thompson 1967; Wageman, 1995), people also reciprocate the behaviors they perceive (Fehr & Gintis, 2007). If a person perceives another person's act as cooperative, then the person more likely reciprocates by cooperating (Koster & Sanders 2006). But if a person perceives another person's act as non-cooperative, then the person more likely reciprocates by engaging in non-cooperative behavior (Andersson & Peerson, 1999; Glomb & Liao, 2003). Because working relationships are dynamic (Bies, Tripp, & Kramer, 1997)**,** a series of behaviors manifest into an overall pattern of a behaviors within a relationship. Therefore, how people perceive others' behaviors will influence people's perception of their overall relationship.

Inferences about behaviors depend on how people categorize the behavior (Smith, 1989). An attempt to outperform is a common behavior in organizational relationships, as

status seeking is a natural occurrence within organizations (Washington & Zajac, 2005) Therefore, people within organizations will likely be in multiple situations where they will try to outperform others or will encounter others' attempts to outperform. Consequently, they will encounter many opportunities to categorize attempts to outperform and make inferences based on the categorization.

The influence of categorization of behaviors on the perception of working relationships suggests that coopetive categorization will influence whether a person would perceive the same working relationship as both cooperative and competitive. Because an attempt to outperform indicates an attempt to gain a relatively higher position, the behavior exhibits features that are likely to be interpreted as competitive (Johnson & Johnson, 1999). Because of attributions associated with behaviors (Ames, 2004), people should therefore consistently perceive a relationship that involves attempts to outperform as competitive. But only if the person also categorizes attempts to outperform as cooperative should the person perceive a relationship that involves attempts to outperform as cooperative. I define this type of relationship as *perceptually coopetitive*.

Categories do not only influence people's perceptions, but also guide their actions (Murphy, 2002). If people are categorizing behaviors as cooperative, they are then more likely to reciprocate by also engaging in behaviors that they believe are cooperative (Koster and Sanders, 2006). There are many types of behavior that people categorize as cooperation (Keller & Loewenstein, working paper). A particularly important kind of behavior that is often characterized as a behavioral manifestation of cooperation and is valued within organizations (Kogut & Zander, 1992) is knowledge sharing (Reagans & McEvily, 2003). Knowledge sharing within a working relationship occurs when a person provides valuable information to another person within a working relationship. Because a

person can categorize different types of behavior as cooperative, a person is not limited to reciprocating with the same behavior. Instead, when a person observes a different kind of cooperative behavior, a person can reciprocate through knowledge sharing. A person can also refrain from knowledge sharing as a form of non-cooperative reciprocity in response to another behavior the person categorizes as non-cooperative. Therefore, whether someone categorizes other members' attempts to outperform as cooperative or non-cooperative will influence whether someone shares knowledge. People who believe that an attempt to outperform them is cooperative will reciprocate by sharing knowledge. People who believe that an attempt to outperform is non-cooperative will refrain from sharing knowledge.

Coopetive categorization should have an impact on how often people share knowledge with the people they perceive as competitive. If a person believes that an attempt to outperform is cooperative, then the person is more likely to respond to behaviors the person perceives as competitive by sharing more knowledge. However, if a person believes that an attempt to outperform is non-cooperative, then the person is more likely to respond to behaviors the person perceives as competitive by sharing less knowledge. This will impact how often the person shares knowledge throughout the entire working relationship. I define this type of relationship as *behaviorally coopetitive*.

COOPETIVE CATEGORIZATION AND EGO-CENTRIC NETWORKS

Thus far the discussion has focused on a single relationship, but people within organizations are embedded in a network of numerous working relationships (Grannoveter, 1985). If people's perceptions of their working relationships are based on widely used categories of cooperation and competition, as we have been discussing, then the effects of those categories should apply generally to their working relationships. That

is, people's understandings of the relationship between cooperation and competition—and specifically whether they are willing to categorize attempts to outperform as both cooperation and competition—should guide their willingness to consider not just one relationship but many working relationships as being both cooperative and competitive.

A useful way to specify the question of whether people perceive a series of working relationships as both cooperative and competitive is to conceptualize people's working relationships as sets of ego-centric networks with different kinds of ties. An ego-centric network is the set of social relations between a focal actor and all the other people, or *alters*, with whom they hold a particular kind of social relation, or *tie* (Burt, 1980). For example, people have friendship ties and advice ties, and therefore they have a friendship ego-centric network, which represents all of an individual's friendship ties, and an advice ego-centric network, which represent all of an individual's advice ties. Different kinds of social ties may overlap, such that an individual can have a friendship tie with the same person with whom they have an advice tie. Then, as a means of aggregating across someone's entire ego-centric networks, it is possible to generate a correlation to characterize the degree of overlap between two ego-centric networks of different tie types (Wasserman & Faust, 1994). Thus as a means for exploring people's general willingness to characterize their working relationships as both cooperative and competitive, we can ask whether people's ego-centric cooperation network is correlated with their ego-centric competition network. In a coopetive ego-centric network, a tie that is relatively more cooperative is also relatively more competitive and a tie that is relatively less competitive is relatively less cooperative. But in a non-coopetive ego-centric network, a tie that is more cooperative is relatively less competitive and a tie that is relatively less cooperative is relatively more competitive.

Accordingly, a basis for assessing people's overall propensity to perceive their relationships as both cooperative and competitive is by assessing the overall pattern of their perceived cooperative and competitive ties in the form of a correlation of the two networks of perceived ties. Therefore, I define an ego-centric network with a positive correlation between perceived cooperative and competitive ties as a *perceptually coopetive ego-centric network*. Moreover, a basis for assessing people's overall propensity to share knowledge with people they perceive as competitive is by assessing the overall pattern of knowledge sharing and competitive ties in the form of a correlation of knowledge sharing and competitive ties. Therefore, I define an ego-centric network with a positive correlation between knowledge sharing and competitive ties as a *behaviorally coopetitive ego-centric network*. For a more behaviorally coopetive ego-centric network, relatively more competitive working relationships have relatively more knowledge sharing. For a less behaviorally coopetive ego-centric network, relatively more competitive working relationships have relatively less knowledge sharing.

Therefore, as discussed above, if more coopetive categorization leads people to more likely assess more competitive relationships as also more cooperative, then higher coopetitive categorization should lead to a more perceptually coopetitive ego-centric network. Because coopetitive categorization should also lead people to share knowledge with their perceived competitors, higher coopetitive categorization should also lead to a more behaviorally coopetitive ego-centric network. Therefore:

H1a: People who categorize attempts to outperform as an indication of cooperation will have a behaviorally more coopetive ego-centric network.

H1b: People who categorize attempts to outperform as an indication of cooperation will have a behaviorally more coopetive ego-centric network.

NATIONAL CULTURE AND COOPETIVE WORKING RELATIONSHIPS

In understanding the impact of coopetive categorization on the formation of coopetive working relationships, it is also important to examine the potential antecedents of coopetive categorization. As discussed earlier, the exclusive categorization of behaviors as distinct opposites is a product of social convention. Another way to conceptualize the impact of social conventions is to treat the categories of cooperation and competition as *cultural categories* (Atran et al., 2005; Sperber & Hirschfield, 2004), developed within each cultural group.

Not all national cultures reason about opposites the same way. One particular form of reasoning about opposites that is shaped by culture is *dialectical reasoning* (Peng et al, 1999; Peng, Spencer-Rodgers et al, 2006; Spencer-Rodgers & Peng, 2004). Dialectical reasoning stems from two lay ontological theories that indicate people's own theories about knowledge (Hong et al, 2001). A lay *theory of contradiction* holds that two ostensibly contradictory concepts may both be true (Spencer-Rodgers et al, 2009). An associated lay *theory of change* asserts that the universe is unpredictable and dynamic, therefore what may be the same at one point of time may be different at another point of time (and vice-versa) (Spencer-Rodgers et al, 2009).

People acquire dialectical reasoning from external cultural artifacts such as stories and proverbs (Peng & Nisbett, 1999). Dialectical reasoning appears in some modern Western philosophy (Walton, 1990). It is a subject addressed by Hegel (Gadamer, 1982), Marx (Lukacs & Livingstone, 1972) and Habermas (Ingram, 1989). But it has not had a major impact on general lay beliefs in Western culture (Samson, 2004). In contrast, dialectical reasoning is most prevalent in Chinese culture (Peng et al, 2006). Its meaning is exemplified in the 阴阳(*Yin-Yang)* symbol found in the classic text 易经(*Yi Jing*, *Book of Changes*; Willhelm & Baynes, 1961), demonstrating that black and

white are part of one whole. The integration of opposites is a prominent feature in Laozi's 道德经 (*Dao De Jing*; Lao, 1982), and is associated with wisdom. The virtue of finding a "middle way" between two extremes is also found in Confucius' 中庸 (*Zhong Yong, Doctrine of the Mean; Confucius, 2004*). In China (as well as in Japan, Korea and Vietnam), these texts have long been canonized (Schwartz, 1985), and dialectical reasoning has long permeated stories, proverbs and other commonplace cultural artifacts within China (Peng et al, 1999). Because greater access to cultural artifacts make knowledge structures more culturally accessible (Hong et al, 2004), people in China more familiar with dialectical reasoning (Spencer-Rodgers et al, 2006; 2009). As a result, people in China are more likely to have a general disposition towards dialectical reasoning that applies to multiple contexts (Spencer-Rodgers et al; 2006; 2009).

Dialectical reasoning may overcome the negative effects of social convention on coopetive categorization. Dialectical reasoning influences people's general beliefs about contradiction and change, which make people less hindered by their perception of two categories as opposites. Therefore, if a person has a high amount of dialectical reasoning, the person is more likely to tolerate the idea that a behavior can be both cooperative and competitive, even if the idea is counter-intuitive to the premise that cooperation and competition are opposites. The person is also more likely to think about the relationship between cooperation and competition based on the current situation and not based on a standard rule. Consequently, the person is more likely to discover a behavior that they believe is both cooperative and competitive. Although an attempt to outperform others is not the only behavior that could potentially be categorized as both cooperative and competitive, as mentioned earlier, the behavior exhibits features that represent both cooperation and competition. Higher dialectical reasoning should therefore enable the coopetive categorization associated with attempts to outperform, in particular. Therefore,

any cross-national differences in dialectical reasoning should also be reflected in differences in coopetive categorization. Therefore:

H2: People in China will more likely categorize an attempt to outperform as cooperative.

Further, given my two earlier predictions about the effects of coopetive categorization on ego-centric networks of working relationships, we can make inferences about the relationship between national culture and ego-centric networks. If people in China are more likely to categorize attempts to outperform as cooperative, they should be more likely to both perceive their competitive working relationships as cooperative and share knowledge with their competitors. Therefore, both behavioral and perceptual coopetition should be higher in China than in the US. Because these cross-national differences are attributed to differences in categorization, the impact of national culture on the amount of coopetition should be mediated by coopetitive categorization. Therefore:

H3a: People in China will have a behaviorally more coopetive ego-centric network.

H3b: The relationship between national culture and behavioral coopetition in the ego-centric network will be mediated by coopetitive categorization (the categorization of attempts to outperform as cooperative).

H3c: People in China will have a perceptually more coopetive ego-centric network.

H3d: The relationship between national culture and perceptual coopetition in the ego-centric network will be mediated by coopetitive categorization (the categorization of attempts to outperform as cooperative).

An overview of the theoretical model for the three hypotheses is presented in **Figure 5**.

METHODS

In this study I examined both the influence of categorization and national culture on the amount of coopetition in ego-centric networks. First, I predicted that people with higher coopetitive categorization would have a perceptually and behaviorally more coopetitive ego-centric network. Second, I predicted that people in China (compared to people in the US) would have higher coopetitive categorization. . Third, I predicted that people in China would have a perceptually and behaviorally more coopetitive ego-centric network, which would be attributed to coopetitive categorization.

To empirically examine the hypotheses laid out, I conducted a two-part survey of working professionals in both the US and China. A survey of working professionals was necessary for collecting information about people's current working relationships. In the first part of the study, I asked questions about categorizations and collected the names of people with whom participants' had working relationships. In the second part of the study, I asked participants about the nature of each of their working relationships.

PARTICIPANTS

I tested the above hypotheses using categorization data and egocentric network data collected from working managers attending part-time MBA courses at a large public university in the United States and a large public university in the Peoples' Republic of China. A total of 75 managers in the United States and 55 managers in China participated in the study. All of the participants in the United States used in the sample were Native English speakers[7]. In the United States, 89% were Non-Hispanic White, 5%

[7] We eliminated 32 subjects from the US sample who were not Native English speakers.

of the participants were Asian, 5% were Hispanic and 1% was African American. In China, all participants were Han Chinese. The average age of the US participants was 30 and the average age of the Chinese participants was 32. Male participants comprised 74% of the US sample and 62% of the Chinese sample. All participants had earned college degrees and had at least three years of full-time work experience. Within each sample, each major industry, including technology, services and manufacturing, was represented.

Participation in the study was voluntary. To encourage participation, participants were provided with a random draw for a prize (a meal for two at a high end local restaurant). A total of four prizes were given.

PROCEDURE AND MATERIALS

I collected data at two separate times in a paper-pencil format to reduce potential demand effects associated with asking questions about cooperative and competitive behaviors and cooperative and competitive relationships.

The survey was originally constructed in English. Two native Chinese speakers translated the survey into Chinese and compared translations to check for validity of items. The Chinese survey was then back-translated and checked for accuracy with the original survey with two native English speakers.

Time One Survey

In the first part of the time one survey, participants were asked to generate a list of the people with whom they work within their organization, a common method used in ego-centric network analysis (Burt, 1997; Campbell & Lee, 1991). I limited the number of names they could list to 24 people and to those within their organization to ensure that the working relationships were most significant and not confounded by inter-organizational relations. I asked for names on the time one survey so as to prevent any

influence on participants' selection of names due to the particular kinds of network ties I would later ask about, a method used in previous ego-centric network studies in organizations (e.g., Chua, Ingram, & Morris, 2008). I allowed them to use partial names or nicknames to aid any potential concerns over confidentiality.

The remainder of the time one survey asked participants to categorize behaviors. I asked each participant to rate brief, one or two sentence descriptions of behaviors. They rated all the behaviors three times, once each for whether the behavior could be categorized as cooperation, as commitment to the organization and as competition. I provided a 5-point scale (discussed later in the "Measures" section) so they could indicate not only membership and non-membership but also strength of category membership. I asked about commitment so I could separate people's considerations of the behaviors for cooperation and for competition, and so as to make it clear to participants that they could rate a given behavior as belonging to multiple categories.

I included 25 behaviors. Four items asked about attempts to outperform (discussed later in the "Measures" section). The remaining items provided a range of behaviors likely to be categorized as very good and very poor examples of each category (cooperation, commitment and competition) so as to anchor people's understanding of the scales, a method used typically in studies of categories (e.g., Weller, 2007). The list of behaviors was presented in a different random order for each of the three times participants evaluated them. Across participants, half received each list of behaviors in one order, and half received each list of behaviors in the reverse order, to test for order effects. Also across participants, and orthogonal to the order manipulation, I counterbalanced the order of the categories participants considered. Half the participants rated behaviors for cooperation first and competition third, and half rated behaviors in the

reverse order. Finally, participants provided demographic information about themselves and information about their organizations.

Time Two Survey

The time two survey occurred one to two weeks after the first survey. I provided each participant with the list of names they had provided on the time one survey. I asked them about the list of names three times, once each to rate the level of competition, of cooperation and of knowledge sharing in their relationship with each person on their list. I counterbalanced the order in which we asked about the different tie types. In one survey, cooperation was first and knowledge sharing was third, while the other survey listed them in the reverse order. At the end, I asked each participant to provide contextual information about each tie.[8]

MEASURES

Dependent Variables

Perceptual Coopetiveness of Ego-Centric Network. Each participant was asked to rate each working relationship separately. For cooperation, they were asked to "please circle (rate) the extent to which you believe your working relationship with each of the people listed below is cooperative or non-cooperative." For competition, they were asked to "please circle (rate) the extent to which you believe your working relationship with each of the people listed below is competitive or non-competitive." For each working relationship, participants were asked if the item indicated (with x being

[8] I asked them whether the alter was a superior, subordinate or peer, whether the participant interacts formally on a daily basis with the alter, and whether the participant interacts informally on a daily basis with the alter. Although there were significant results at the tie-level, they did not influence the impact of coopetitive categorization on coopetition in each tie. For simplicity of results, I am not presenting tie-level data and thus not presenting results about these variables.

instantiated by “cooperative” or “competitive”): 1 = “very non-x”, 2 = “slightly non-x”, 3 = ” neither x nor non-x”, 4 = “slightly x” or 5 = “very x”.

To measure the entire ego-centric network, I then calculated the within-participant correlation of the participant’s score for cooperation and competition. A more positive correlation indicates more coopetition, as relationships that are higher on cooperation are also higher on competition (and vice-versa).

Behavioral Coopetiveness of Ego-Centric Network. Each participant was also asked to “circle (rate) how often you share work-related knowledge with each of the people you work with.” For each working relationship, participants were asked if the item indicated: 1 = “I never share any knowledge”, 2 = “I rarely share any knowledge”, 3 = “I sometimes share knowledge”, 4 = “I often share knowledge” or 5 = “I always share knowledge”.

To measure the entire ego-centric network, I then calculated the within-participant correlation of the participant’s score for knowledge sharing and competition. A more positive correlation indicates more coopetition, as relationships that are higher on knowledge sharing are also higher on competition (and vice-versa).

Independent Variables

Coopetive Categorization: I developed four items that represented instances of someone attempting to outperform others. They were: 1) “Someone attempts to outperform other colleagues in the organization”, 2) “Someone gauges others' performance and makes sure that he or she is doing better than the others”, 3) “Someone tries to get the quality of his or her work to be better than the quality of other colleagues' work”, and 4) “Someone tries to make sure that he or she isn't outdoing others in the organization” (reverse-coded). I asked participants to rate these items, like all behaviors participants considered, on five-point scales concerning cooperation, competition and

commitment to the organization. For each behavior, participants were asked if the item indicated (with x being instantiated by cooperation, competition or commitment to the organization): 1 = "a strong indicator of non-x", 2 = "a weak indicator of non-x", 3 = "neither an indicator of x or non-x", 4 = "a weak indicator of x" or 5 = "a strong indicator of x". From these data, I drew my measure of coopetive categorization. To simplify the presentation of results, I used as my measure of coopetitive categorization an aggregation of the ratings of four items as to whether they indicated cooperation/non-cooperation (α=.73).[9] The same coopetitive categorization score for the participant was applied to each of the participant's working relationships.

National Culture: A "1" was applied to all participants (and their working relationships) that were in the United States. Only native English speakers and US citizens were included in the sample. A "0" was applied to all participants (and their working relationships) that were in China.

Control Variables

Demographic Variables: Age and gender were also included as control variables because they commonly influence interactions within organizations.[10]

[9] I also found similar findings for more complex measures that included items relating to categorization of competition (including correlations of items and standardizing items), but chose to include this measure for ease of presentation. There was a clear consensus within both nationalities that attempts to outperform indicated competition (M_{CH}=3.90, M_{US}=3.70).

[10] Data was also collected on work experience, type of organization and organizational commitment, but data from these measures are not included in this study.

RESULTS

DESCRIPTIVE RESULTS AND CROSS-NATIONAL COMPARISONS

Means and Standard Deviations are presented separately for the US and China in **Table 6**. First order correlations for the full sample are presented in **Table 7**. Cross-national comparisons revealed that people in China categorized attempts to outperform as more cooperative than people in the US (M_{CH}=3.49, M_{US}=2.99, t(129) = 4.82, p<.001), supporting Hypothesis 2. Moreover, people in China had, on average, a more perceptually coopetitive ego-centric network (M_{CH}=0.17, M_{US}=-0.08, t(129) = 3.37 p=<.05) and a more behaviorally coopetitive ego-centric network (M_{CH}=0.21, M_{US}=-0.05, t(129) = 1.95 p=<.05) than people in the US.

REGRESSION RESULTS FOR EGO-CENTRIC NETWORKS

The correlation between perceptual coopetition and behavioral coopetition in ego-centric networks was particularly high (r=0.68), indicating that the two measures indicate a perceptual and a behavioral aspect of the same ego-centric network. To test for the impact of coopetitive categorization and national culture on the two ego-centric networks, I conducted two stepwise linear regression model analyses with the within-participant correlation scores for all cooperation/competition ties and knowledge sharing/competition ties. The results for perceptual coopetition in ego-centric networks are presented in Table 8. Coopetitive categorization predicted perceptual coopetition in ego-centric networks, thus supporting Hypothesis 1a. National culture also predicted perceptual coopetition in ego-centric networks, thus supporting Hypothesis 3a. To test Hypothesis 3b, I also ran a bootstrapped test of an indirect effect of national culture on perceptual coopetition in ego-centric networks through coopetitive categorization (Preacher & Hayes, 2005). The mean indirect effect was 0.07 (95% CI: 0.00-0.17), p < .05, providing evidence of

mediation. Therefore, compared to people in the US, people in China were more likely to believe that a relatively more cooperative working relationship was also a relatively more competitive relationship, and their beliefs were partially attributed to coopetitive categorization.

The results for behavioral coopetition in ego-centric networks are presented in **Table 9**. Consistent with results for perceptual coopetition in ego-centric networks, coopetitive categorization predicted behavioral coopetition in ego-centric networks, thus supporting Hypothesis 1b. National culture also predicted behavioral coopetition in ego-centric networks, thus supporting Hypothesis 3c. To test for Hypothesis 3d, I ran a bootstrapped test of an indirect effect of national culture on behavioral coopetition in ego-centric networks through coopetitive categorization (Preacher & Hayes, 2005). The mean indirect effect was 0.13 (95% CI: 0.04-0.23), $p<0.05$, providing evidence of mediation. Therefore, compared to the US, people in China are more likely to share knowledge with people they believe are in a relatively more competitive working relationship, and their beliefs are partially attributed to coopetitive categorization.

DISCUSSION

In this study, I examined the relationship between national culture, categorization and ego-centric networks of working relationships. In particular, I examined the relationship between the categorization of attempts to outperform as cooperative or non-cooperative and the propensity to engage in working relationships that are relatively both cooperative and competitive. I also assessed whether people from a national culture with a reasoning style that emphasizes the integration of opposites, that of dialectical reasoning, would be more inclined to categorize attempts to outperform as cooperative and would more likely cooperate with people they believed were competitive. In determining the impact of coopetitive categorization and national culture on patterns of working relationships, I examined the impact of coopetitive categorization on within-participant correlations of cooperation/competition and knowledge sharing/competition in the person's overall ego-centric network of intra-organizational working relationships.

Overall, the results supported my predictions. Coopetive categorization influenced both perceptual and behavioral coopetition in ego-centric networks. National culture also predicted both coopetitive categorization and perceptual and behavioral coopetition in ego-centric networks. Moreover, the propensity of people in China to cooperate more with others they perceive as more competitive was in part attributed to higher levels of coopetive categorization.

COOPETITIVE CATEGORIZATION AND COOPETITION IN EGO-CENTRIC NETWORKS

Previous studies on coopetition within organizations have focused on people's motivation to engage in coopetive relationships. The results from this study provided evidence that the way people categorize attempts to outperform influences the working

relationships that people engage in. Coopetitive categorization predicted whether people engaged in working relationships that they perceived as relatively more cooperative and competitive. Coopetitive categorization also predicted whether they shared knowledge with people they perceived as in a relatively more competitive relationship. These findings suggest it is possible that the formation of coopetition in ego-centric networks can be the result of people's beliefs. The role of categories in perceiving and understanding behaviors and relationships provides an alternative explanation for why people form relationships that are both cooperative and competitive. This represents a theoretical advance in our understanding of cooperation and competition within organizations.

The results also suggest that the categorization of attempts to outperform was related to sharing knowledge within relatively competitive working relationships. This finding, in particular, has broad implications for organizations, as it suggests that the categorization of organizationally-beneficial behaviors influences people's propensity to engage in multiple organizationally-beneficial behaviors. Tournament theory explains that people's attempts to outperform each other increases individual effort and the aggregate result of the individuals' effort is beneficial to organizations (DeVaro, 2008; Lazear & Rosen, 1981). The act of knowledge sharing has been found to be beneficial to organizations (Kogut et al., 1992; Nonaka, 1994; Szulanski, 1996). The findings from this study suggest that cognition influences the co-occurrence of both potentially-beneficial behaviors.

The results of this study therefore have implications for research on coopetition in organizations. Previous research on coopetition has found that the presence of coopetive relationships improve firm performance (Luo et al, 2006). My findings suggest that one possible explanation for this effect is how people interpret and react to attempts to

outperform. The results found that people who believe that attempts to outperform are cooperative are more likely to share more knowledge with people who are more competitive with them. This suggests that organizations with people who categorize attempts to outperform as both cooperative and competitive are more likely to find reciprocation with both attempts to outperform and knowledge sharing, rather than just one or the other, thus producing a net benefit to the organization overall. Future research can address whether coopetitive categorization influences organizational outcomes and whether these outcomes are mediated by the formation of coopetive working relationships.

The results of this study also have implications for research on cognition in social networks. The results that attribute categorization to the content of ego-centric networks demonstrate that general lay beliefs about behaviors can influence people's perceptions and behavior in ego-centric networks of working relationships. Future research can address other general beliefs about behaviors. For example, people's general beliefs about the specific behaviors that constitute trust may have an impact on people's trust networks (Krackhardt & Hanson, 1997).

NATIONAL CULTURE AND COOPETITION IN WORKING RELATIONSHIPS

The results also revealed that the two national cultures of the US and China differed in coopetitive categorization and in perceptual and behavioral coopetition in ego-centric networks. People in China were more likely to categorize attempts to outperform as cooperative, more likely to perceive relatively more competitive relationships as relatively more cooperative, and share more knowledge with colleagues who were in a relatively more competitive relationship. Moreover, differences between national cultures were mediated by coopetitive categorization. The finding that people in China

engaged in more coopetitive categorization and were relatively more cooperative with people they were also relatively more competitive with provides new evidence of a relationship between national culture, cognition and social networks. Because, as discussed earlier, categories are culturally-conditioned, future research can explore additional categories of behaviors that may differ by culture and have an impact on social networks. The connection between national culture and cognition also suggests that the way people categorize competitive behaviors is acquired, and therefore can be learned. Future research can address whether managerial mechanisms can influence the relationship between categories of cooperation and competition and networks of working relationships.

LIMITATIONS

This study has several limitations that can be addressed with future research. First, as an ego-centric analysis, the findings are limited to the ego's perception of the relationship and does not include alters' views of the relationship. Future research can address how coopetive categorization influences the consistency of perceptions of working relationships among multiple people within an organization. Second, the assessment of cultural differences in this study was limited to a cross-national comparison and did not include any examination of the cultural antecedents that are mediating cultural differences. As Study 1 illustrates, dialectical reasoning does not only represent cross-national differences in reasoning, but also represents individual differences in reasoning. Individual differences may relate to heterogeneity in cultural influences within each nation or individual differences in personality, such as the need for cognitive closure (Kruglanski & Webster, 1996; Tetlock, 1983). Future research can address this limitation by exploring dialectical reasoning as an individual-level difference

variable and its influence on people's propensity to engage in coopetitive relationships. Third, my assessment of cultural differences were limited to a comparison between the US and China. Future research can examine how other national cultures and other forms of culture (such as organizational culture) influence the relationship between coopetitive categorization and coopetive working relationships. Finally, this study was limited to an assessment of one particular type of competitive behavior, that of attempts to outperform. Future research can address how the categorization of other behaviors can influence peoples' coopetiveness of working relationships.

CONCLUSION

In conclusion, this study offers a new perspective on culture and cognition in organizations by demonstrating that people's thoughts about seemingly opposing yet fundamentally important categories, such as cooperation and competition, can influence how people perceive others in the organization and how they interact with others in the organization. These thoughts are manifested in networks of organizational relationships, but national cultural differences suggest that the origin of the cognition is influenced by factors outside the organizational context. The study therefore provides further evidence that organizational experience is influenced by culture (DiMaggio, 1997; Douglas, 1986).

CONCLUSION

This dissertation provided a new perspective on the relationship between cooperation and competition. Instead of explicitly theorizing about the relationship between cooperation and competition, I empirically examined people's lay beliefs about the relationship. In particular, I studied one type of competitive behavior that could potentially be categorized as cooperative; the attempt to outperform others. I assessed the impact of people's categorization of attempts to outperform others as cooperative or non-cooperative (which I defined as coopetitive categorization) on multiple outcomes involving multiple populations (i.e., students and working professionals in the US and China). I found that coopetitive categorization influenced people's immediate behavioral and perceptual reactions to others' attempts to outperform them, as well as people's networks of ongoing working relationships. Therefore, the results of the dissertation suggest that whether people categorize competitive behaviors as exclusively competitive or both cooperative and competitive has both an immediate and long-term impact on people's behavior in organizations.

In this dissertation, I also examined culture as an antecedent coopetitive categorization. I found national cultural differences in coopetitive categorization among both students and working professionals, and found that national cultural differences were mediated by dialectical reasoning, a general reasoning style about opposites with Eastern philosophical roots. I also found national cultural differences in people's

perceptual and behavioral reactions to others' attempts to outperform, as well as people's ego-centric networks of working relationships. Each of these differences was partially attributed to coopetitive categorization. Therefore, the results of the dissertation suggest that a culturally-shaped general reasoning style about opposites influences people's immediate and long-term reactions to competitive behaviors.

In each study of my dissertation, I discussed several specific implications of my findings for theory and research on teams and working relationships. However, the implications of my findings are not limited to these two organizational contexts. First, cooperation and competition do not only occur in teams and working relationships. For example, cooperation and competition are often discussed in research on inter-departmental relationships (Tsai, 2002) and inter-firm relationships (Chen, 2008; Khanna, Gulati, & Nohria, 1998). Future research can explore the influence of people's beliefs about the relationship between cooperation and competition in each of these contexts. Second, cooperation and competition are not the only two categories in organizations that are conventionally treated as opposites. Other examples are work and play (Glynn, 1888), superior and subordinate (Dienesh & Liden, 1996; Gerstner & Day, 1997) and employee and contractor (Pearce, 1993). Future research can explore other outcomes of the influence of culturally-influenced reasoning about opposites on categorization.

To summarize, people acquire basic beliefs about opposites from their cultural environment and these beliefs manifest into perceptions of others and behaviors that are

critical to organizations. This dissertation thus provides new evidence that the influence of culture on cognition matters to organizations (Dimagio, 1997; Douglas, 1986).

APPENDICES

Appendix A: Brainstorming Task

Sales Team Task Preparation

In a few minutes, each of you will be placed at a computer where you will engage in a sales team exercise. But before you begin that exercise, we would like for you to do the following:

1. **Introduce Yourselves.** Please first let each member know your name, your major, the class that you are taking in the Management Department, and what you like about studying Management.

2. **Do a Brief Brainstorming Task.** The sales task exercise you are about to do is about selling a new product into a new market. Each of you has experience trying new products (new foods, new electronics, etc.). Please jot down (as a group) 12 actions that you believe a firm can do to successfully launch a new product into a new market. The actions don't have to be in order of priority. In the past, groups were able to generate at least 12 actions within five minutes. Please use no more than five minutes for 12 actions. Please record each action on the back of this sheet.

Appendix B: Instructions

Safari Teas Sales Team Exercise

DO NOT WRITE ON THIS. In this exercise, you will be one of three people managing stands selling African teas for "Safari Teas". You and your teammates will have to place orders for four kinds of tea:

- hot regular tea (Hot-R)
- cold regular tea (Cold-R)
- hot and fruity tea (Hot-F)
- cold and fruity tea(Cold-F)

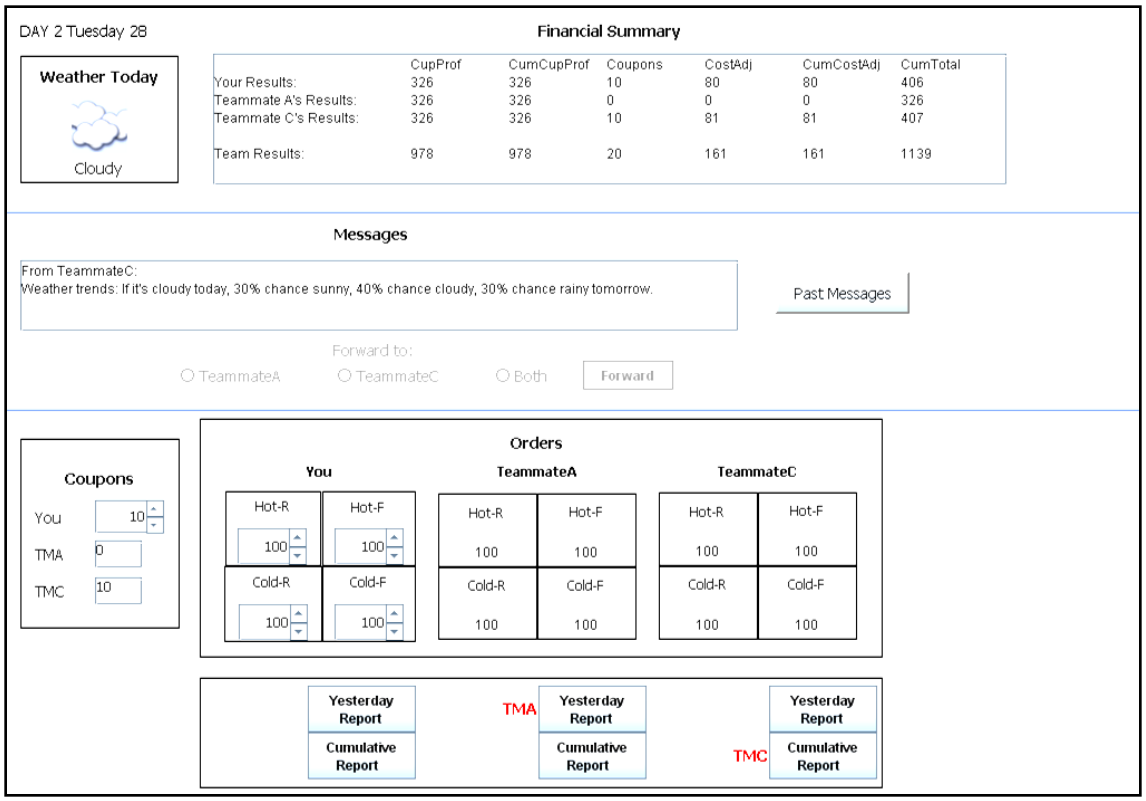
You and your teammates will also make decisions about offering free drink coupons to special customers. Each of you can offer:

- 0 coupons
- 10 coupons
- 20 coupons
- 30 coupons

Each of you is sitting at your own computer, and has control over one stand's orders and coupons for 25 "days" of selling tea. In what follows, we will explain how to decide on your orders and coupon offers. **You have two goals: 1) help your team get as high a possible profit within 25 days as it can and 2) personally get as high a possible profit within 25 days as you can.**

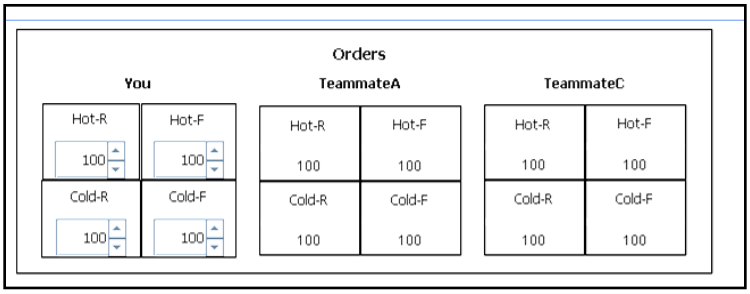
When you first begin, you will select the color that corresponds with the dot that was given you. You will then have the opportunity to send and receive one message before the exercise to tell others how you feel. Then a main window will open up. "Teammate A" and "Teammate C" will appear as the other two colors that other teammates have (BLU, RED or GRN).

The main window of the exercise looks like this (financial summary appears on Day 2):



On the following pages, we explain what each part of this window and explain what it means.

Tea Orders



Every day, you can adjust the orders for that day. You can type any number between 0 and 1000 in each text box, or you can use the arrows to increase or decrease each order by 1. The order for each kind of tea is initially set at 100 for the first day. If you mistakenly enter more than 1000, it will revert to the last number you entered. Day 24 is the last day to set orders, and Day 25 will show final results.

In addition to your own orders, the screen also shows you the orders your teammates made yesterday.

Your task in setting orders is to predict how many of each kind of tea will sell tomorrow for your stand. **You want to be as accurate as possible**: if you make more than you sell, there is a $1 per order cost for throwing it away, and if you do not order enough, you missed an opportunity to make $1 per order of net sales.

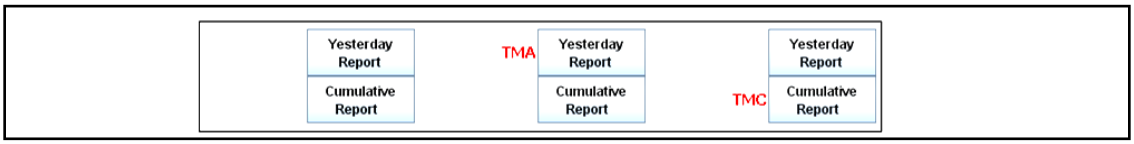
Coupons

Every day, you can adjust how many coupons you will offer the next day. You can choose to offer 0, 10, 20 or 30 coupons, starting from Day 1. So can your teammates.

Coupons bring rewards, but at a cost. **If you offer more coupons than your teammates, you will earn more than they will. And if they offer more coupons than you, you will earn less than them. Further, if the team orders more than 30 coupons total, the team will lose money**. Those with the fewest coupons will earn the least.

So pay attention to your total number of coupons and your team's overall number.

Reports



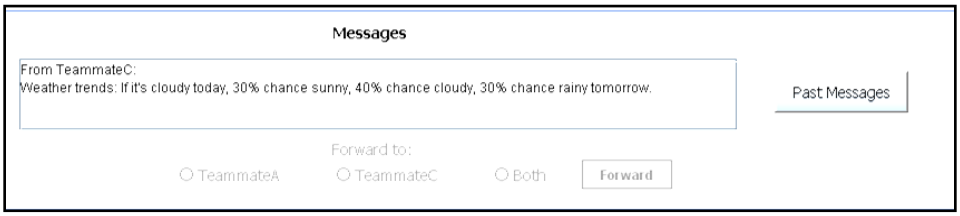
As you go, you will get feedback about how many cups you sold, and how many cups were thrown away. You can look at your results or the results for each of your teammates from yesterday ("Yesterday Report") or from all prior days ("Cumulative Report") beginning on Day 2. These are located below the orders set for you and your teammates. The reports on the left (right below your orders) are about you, the other two correspond with the teammates' orders. Please note that the demand for your products is the same as others, with the only exception being any change in demand based on your performance.

Each time you click on a report, it will show up in the window on the bottom-right. You can click as many times as you want.

When you or your teammates click to look at reports, red letters appear that all teammates see, as in the TMA and TMC letters appearing. In this example, Teammate A is looking at Teammate A's Yesterday Report and Teammate C is looking at Teammate C's Cumulative Report. The BLU, GRN and RED letters will appear in your version, depending on your color.

These red letters show "**who is gauging whom"** throughout the process as you make adjustments to your orders. You can use these reports to assess how you are doing in relationship to others, and you can assume that if they are looking at others' reports they are doing the same.

Messages

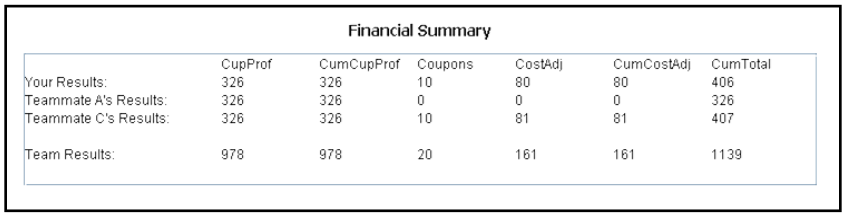


Once a day, there will be a message sent from Headquarters to one of the three teammates (including you). This will include information that will be helpful to the entire team. If not today, it may be helpful later. When one teammate receives a message from headquarters, you can forward the message to one or more of the teammates. The "Forward to" feature is then turned on. You click on the recipient(s) and then click on "Forward". The quicker you send the message, the faster others can use it. All messages are stored in "Past Messages" for future

reference. Messages will be sent from Headquarters to you, Teammate B, on Days 3, 6, 9, 12, 15, 18, 21 and 24. If you click on "Past Messages", it will show up in the window on the bottom-right.

If you don't forward the message, only you will have this information.

Financial Summary

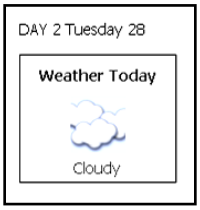

Financial Summary

	CupProf	CumCupProf	Coupons	CostAdj	CumCostAdj	CumTotal
Your Results:	326	326	10	80	80	406
Teammate A's Results:	326	326	0	0	0	326
Teammate C's Results:	326	326	10	81	81	407
Team Results:	978	978	20	161	161	1139

From Day 2 onwards (not Day 1), you can see a Financial Summary for each teammate and a total for the whole team. CupProf= Yesterday's profit based on the orders of cups. CumCupProf = Profit based on the orders of cups to date. Coupons = Coupons chosen yesterday. CostAdj = The adjusted profit based on coupons used. CumCostAdj = the adjusted profit to date based on coupons used. CumTotal = The cumulative total profit. The team results are on the bottom. The most important team number and personal number are on the right-- CumTotal. And remember:

Cumulative Total Profit =
Total Profits from Cups + Total Profits from Cost Adjustment (from Coupons)

Day, Time and Weather

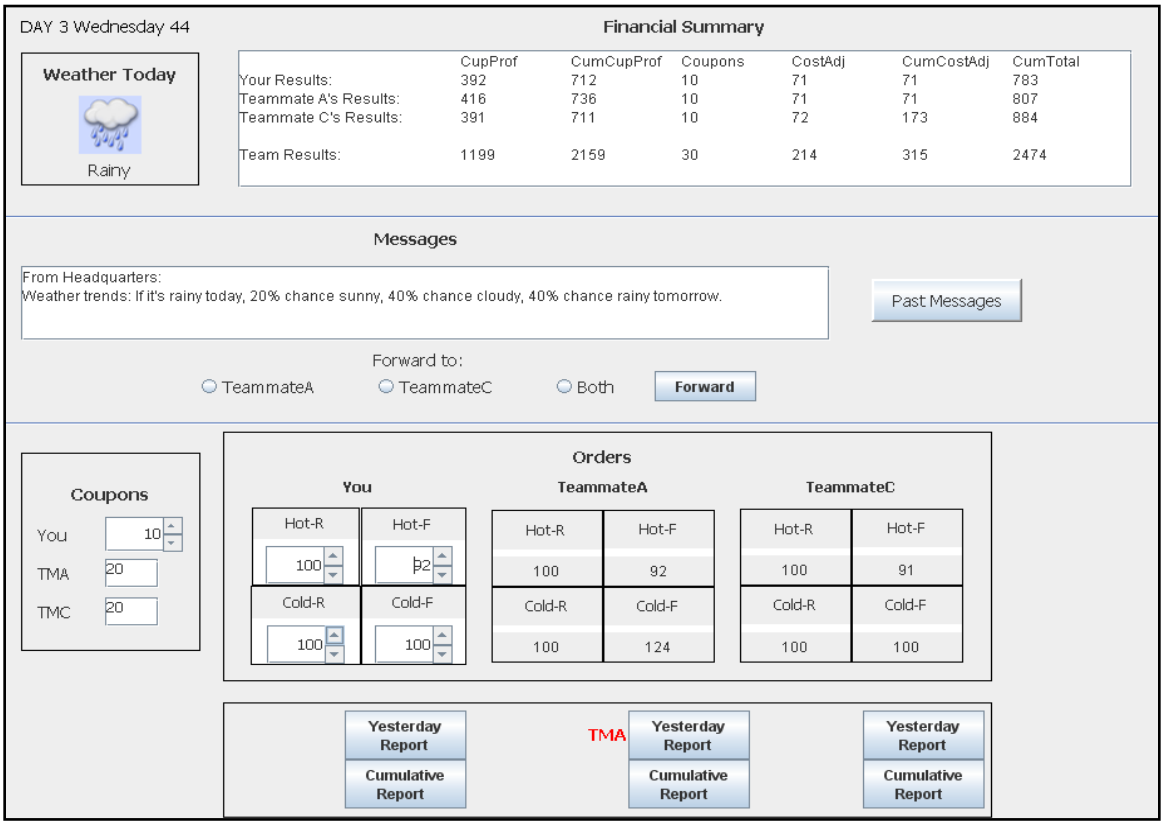


On the very top-left, it will show the Day, the time and the weather. There are 25 days. Each day lasts 60 seconds. At the end of each day, three reports will appear (you cannot close them): 1) yesterday's orders for everyone, 2) The financial summary for today and 3) any messages that were forwarded. DO NOT CLICK AWAY FROM THESE PAGES DURING THIS TRANSITION BETWEEN DAYS.

There are three types of weather (sunny, cloudy and rainy). This may impact sales.

GOOD LUCK!

Appendix C: Screenshot of Computer Simulation



TABLES

Table 1: Means and Standard Deviations for China and US Participants

	China (N=75)		United States (N=69)	
	Mean	Std. Deviation	Mean	Std. Deviation
Dialectical Reasoning	4.33	0.49	3.57	0.58
Semantic Association	1.84	1.12	1.88	0.90
Independent Self-Construal	4.49	0.63	5.31	0.74
Group-Collective Self-Construal	5.23	0.82	4.63	0.99
Age	21.25	1.64	20.32	1.09
Gender (F)	0.65	0.48	0.62	0.49
Perceived Difficulty of Task	4.45	1.56	4.65	1.61
Categorization of Attempts to Outperform as Cooperative (Coopetive Categorization)	3.70	0.47	2.68	0.67
Categorization of Attempts to Undermine as Cooperative	1.44	0.36	1.60	0.68
Knowledge Sharing	5.12	2.28	3.54	2.03
Perception of Others' Intention to Cooperate	5.77	0.99	5.17	1.13

Table 2: First Order Pearson Correlations of Variables (N-=144)

	1	2	3	4	5	6	7	8	9	10
1. Dialectical Reasoning	*									
2. National Culture (US)	-.58*	*								
3. Semantic Association	-.04	.02	*							
4. Independent Self-Construal	-.57*	.52*	.17*	*						
5. Group-Collective Self-Construal	.24*	-.32*	.07	-.10	*					
6. Age	.14	-.32*	-.07	-.12	-.00	*				
7. Gender (F)	.01	-.03	-.07	-.11	-.05	.09	*			
8. Value of Cooperation	.35*	-.41*	.03	-.38*	.20*	.09	.15	*		
9. Coopetive Categorization	.47*	-.67*	.11	-.28*	.21*	.18*	-.07	.41*	*	
10. Knowledge Sharing	.38*	-.35*	.09	-.19*	.13	.01	.18*	.38*	.37*	*
11. Perception of Others' Intention to Cooperate	.32*	-.28*	.18*	-.12	.20*	.07	-.02	.47*	.35*	.36*

"*" for each correlation denotes p<.05

Table 3: Linear Regression Results for Coopetive Categorization (N-=144)

	Base	Dialecticism (H3a)	National Culture (H3b)	Both (H3c)
Constant	1.92 (1.03)	0.37(1.10)	3.70(0.85)*	2.46(1.00)*
Semantic Association	0.11(0.06)	0.10(0.06)	0.08(0.05)	0.08(0.05)
Independent Self-Construal	-0.27(0.08)*	-0.05(0.09)	0.06(0.07)	0.13(0.08)
Group-Collective Self-Construal	0.14(0.06)*	0.08(0.06)	-0.02(0.05)	-0.03(0.05)
Age (F)	0.09(0.04)*	0.07(0.04)	-0.01(0.03)	-0.01(0.03)
Gender	-0.15(0.13)	-0.12(0.12)	-0.12(0.10)	-0.11(0.10)
Dialectical Reasoning		0.48(0.11)*		0.22(0.10)*
National Culture (US)			-1.09(0.12)*	-0.99(0.13)*
F	5.60*	8.57*	20.18*	18.59*
R^2	0.17	0.27	0.47	0.49

Number denotes B coefficient. (x) denotes standard deviation. "*" for each coefficient denotes $p<.05$

Table 4: Linear Regression Results for Cooperative Behavior (N-=144)

	Base	Coopetive Categorization (H4a)	Dialecticism (H4b)	Both (H4c)
Constant	8.99(3.20)*	5.24(3.34)	2.99(3.68)	0.91(3.70)
National Culture (US)	-1.70(0.47)*	-0.63(0.58)	-1.19(0.49)*	-0.39(0.57)
Independent Self-Construal	0.10(0.27)	0.30(0.26)	0.44(0.15)	0.322(0.28)
Group-Collective Self-Construal	0.08(0.21)	0.08(0.20)	0.01(0.01)	0.02(0.20)
Age	-0.21(0.13)	-0.19(0.13)	-0.21(-0.13)	-0.19(0.12)
Gender	1.00 (0.38)*	1.14(0.37)*	1.05(0.22)*	1.16(0.37)*
Difficulty of Task	-0.21(0.10)*	-0.23(0.12)*	-0.21(-0.13)*	-0.22(0.12)*
Coopetive Categorization		0.95(0.31)*		0.79(0.31)*
Dialecticism			1.09(0.31)*	0.9(0.36)*
F	4.89*	5.79*	5.77*	6.07*
R^2	0.18	0.20	0.23	0.23

Number denotes B coefficient. (x) denotes standard deviation. "*" for each coefficient denotes $p<.05$

Table 5: Linear Regression Results for Perceived Intention to Cooperate (N=144)

	Base	Coopetive Categorization (H5a)	Dialecticism (H5b)	Both (H5c)
Constant	4.96(1.62)*	3.26(1.70)	2.40(1.88)	1.44(1.89)
National Culture (US)	-0.56(0.24)*	-0.08(0.29)	-0.34(0.25)	0.03(0.29)
Independent Self-Construal	0.03(0.14)	-0.01(0.13)	0.17(0.14)	0.12(0.14)
Group-Collective Self-Construal	0.13(0.10)	0.13(0.10)	0.10(0.10)	0.11(0.10)
Age	-0.01(0.01)	0.00(0.07)	-0.01(0.06)	0.00(0.06)
Gender	-0.07(0.20)	-0.01(-0.01)	-0.05(0.19)	0.00(0.19)
Difficulty of Task	0.04(0.06)	0.04(0.06)	0.04(0.06)	0.04(0.06)
Coopetive Categorization		0.43(0.16)*		0.36(0.16)*
Dialecticism			0.46(0.18)*	0.38(0.18)*
F	2.26*	3.10*	2.95*	3.13*
R^2	0.09	0.10	0.13	.17

Number denotes B coefficient. (x) denotes standard deviation. "*" for each coefficient denotes $p<.05$

Table 6: Means and Standard Deviations for China and US Participants

	China (N=55)		United States (N=75)	
	Mean	Std. Deviation	Mean	Std. Deviation
Coopetitive Categorization	3.49	0.70	2.99	0.67
Correlation of Perceptual and Behavioral Cooperative Ties	0.47	0.30	0.50	0.29
Perceptual Coopetition in Ego-Centric Network	0.17	0.40	-0.09	0.43
Behavioral Coopetition in Ego-Centric Network	0.22	0.47	0.05	0.43

Table 7: First Order Pearson Correlations of Variables (N=130)

	1	2	3	4	5	6
1. Coopetitive Categorization	*	*	*	*	*	*
2. National Culture (US)	-0.40*	*	*	*	*	*
3. Gender (% Female)	0.07	-0.13*	*	*	*	*
4. Age	0.06	-0.28*	-0.05	*	*	*
5. Correlation of Perceptual & Behavioral Cooperation	-0.13	0.04	-0.13	0.03	*	*
6. Perceptual Coopetition in Ego-Centric Network	0.29*	-0.30	-0.01	0.06	-0.03	*
7.Behavioral Coopetition in Ego-Centric Network	0.36*	-0.18	-0.10	0.15	0.02	0.68*

"*" for each correlation denotes $p<.05$

Table 8: Linear Regression Results for Perceptual Coopetition in Ego-Centric Networks (N=129)

	Base	Coopetitive Categorization (H1a)	National Culture (H3a)	Both (H3b)
Constant	-0.18(0.32)	-0.75(0.37)*	2.88(0.34)	-2.62(0.42)
Gender (F)	-0.01(0.09)	-0.03(0.09)	-0.04(0.08)	-0.05(0.09)
Age	0.01(0.01)	0.01(0.01)	0.00(0.01)	0.00(0.01)
Coopetitive Categorization		0.18(0.05)*		0.13(0.06)*
National Culture (US)			-0.27(0.08)*	-0.20(0.09)*
F	0.21	3.47*	3.85*	4.01*
R^2	0.00	0.09	0.09	0.13

Number denotes B coefficient. (x) denotes standard deviation. "*" for each coefficient denotes $p<.05$

Table 9: Linear Regression Results for Behavioral Coopetition in Ego-Centric Networks (N=129)

	Base	Coopetitive Categorization (H1b)	National Culture (H3c)	Both (H3d)
Constant	-0.39 (0.33)	-1.16(0.37)*	-0.14(0.36)	-1.10(.43)
Gender (F)	-0.10(0.09)	-0.13(0.09)	-0.12(0.09)	-0.13(0.09)
Age	0.02(0.01)	0.02(0.01)	0.01(0.01)	0.02(0.01)
Coopetitive Categorization		0.24(0.06)*		0.23(0.06)*
National Culture (US)			-0.16(0.08)*	-0.02(0.09)*
F	2.00	7.17*	2.40*	5.35*
R^2	0.03	0.17	0.06	0.17

Number denotes B coefficient. (x) denotes standard deviation. "*" for each coefficient denotes $p<.05$

FIGURES

Figure 1: Different Conceptualizations of Cooperation and Competition

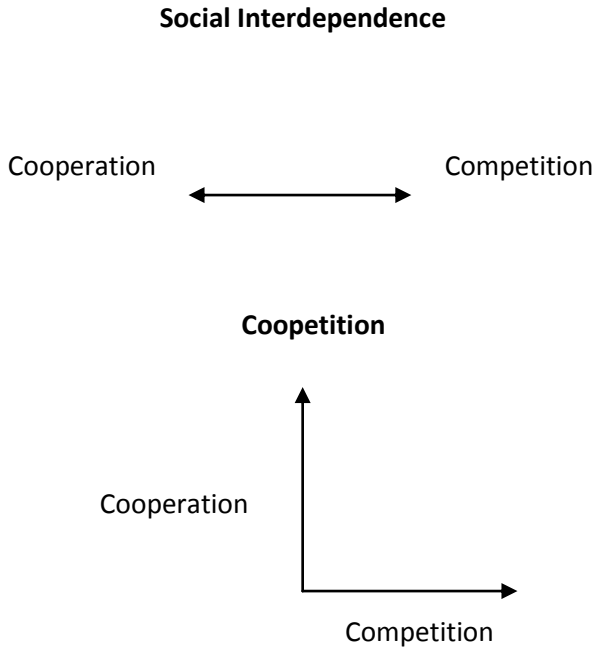


Figure 2: Potential Categorization of Cooperation and Competition

	Non-Competitive	Competitive
Cooperative	Cooperative only	Cooperative and Competitive
Non-cooperative	Not Cooperative nor Competitive	Competitive only

Figure 3: Theoretical Model for Antecedents of Coopetive Categorization

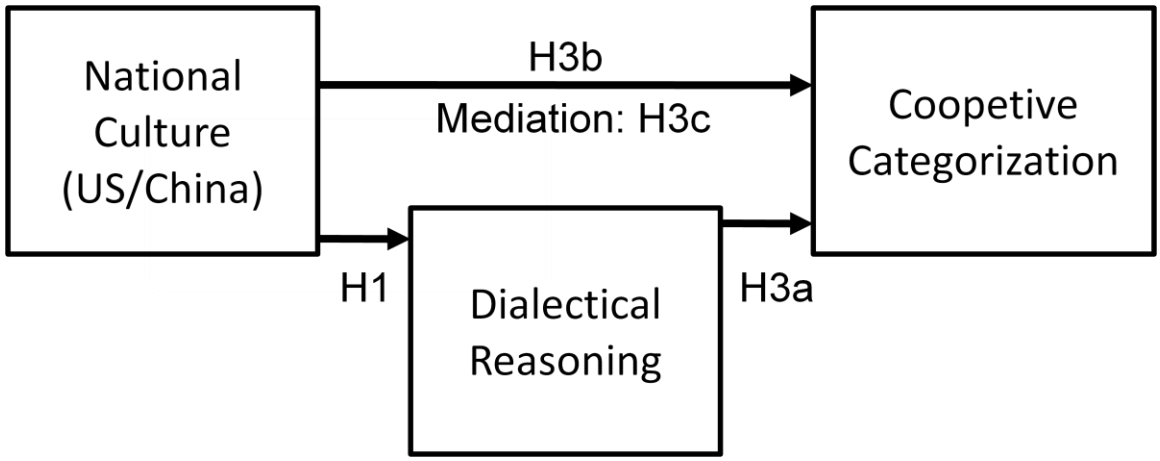


Figure 4: Theoretical Model for Outcomes of Dialectical Reasoning and Coopetive Categorization

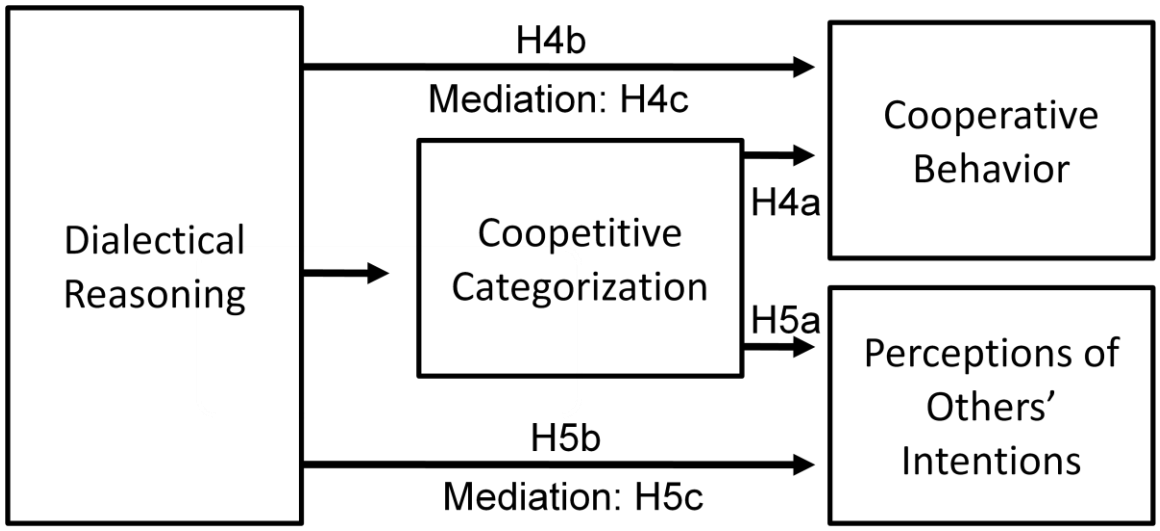
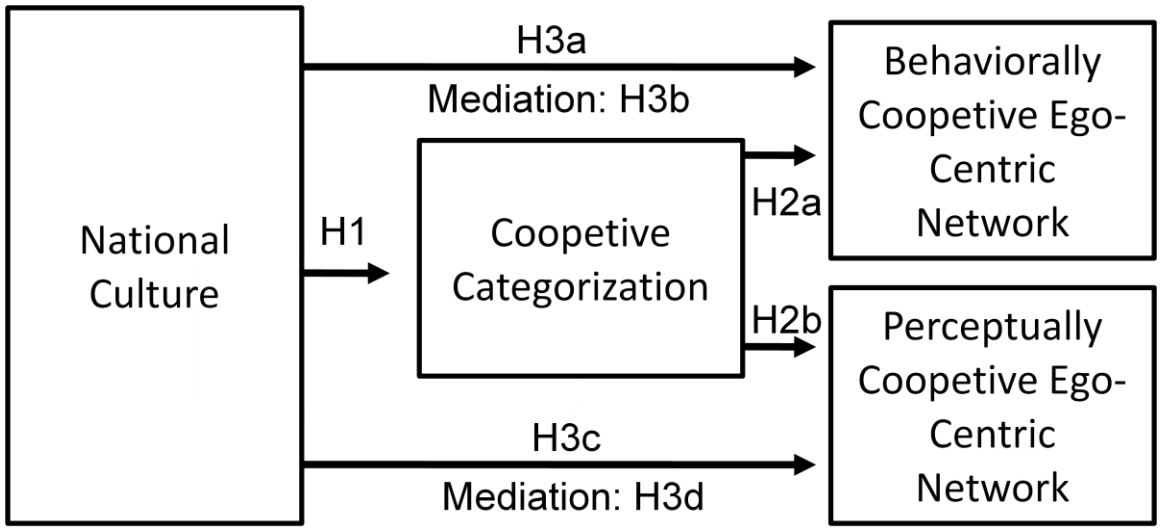


Figure 5: Theoretical Model for Coopetive Categorization and Ego-Centric Networks



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